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## PARTS CATALOG

FOR



# ELECTRIC GENERATING PLANTS

**KB**  
SERIES

**ONAN**

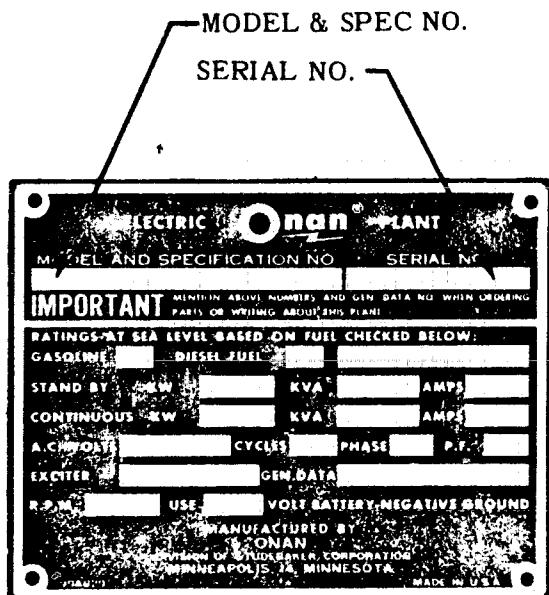
1400 73RD AVENUE N.E. • MINNEAPOLIS, MINNESOTA 55432  
A DIVISION OF ONAN CORPORATION

# PARTS CATALOG

## INSTRUCTIONS FOR ORDERING REPAIR PARTS

### ONAN PARTS

All parts in this list are **Onan** parts. For **Onan** parts or service, contact the dealer from who you purchased this equipment or your nearest authorized service station. To avoid errors or delay in filling your order, please refer to the **Onan** nameplate located on the upper right side of the flywheel housing and give the complete:



### INTERNATIONAL HARVESTER PARTS

All International Harvester parts must be ordered from the International Harvester Company, Chicago, Illinois or the nearest International Harvester Construction Equipment distributor or dealer.

Refer to the International Harvester nameplate located on the right side of the flywheel housing as viewed facing the radiator end.

When ordering parts or requesting service information supply all information stated on engine nameplate and engine serial number which is stamped on front of cylinder block directly below right hand cylinder head.



This catalog applies to the standard **ONAN** KB Series plants as listed below. Powered by an International Harvester UV401 engine (see International Harvesters Manual). Engine parts modified or added by **ONAN** will be in this list and have **ONAN** part numbers. These supersede similar parts listed in the International Harvester manual. **ONAN** parts are arranged in groups of related items and are identified by a reference. All parts illustrations are typical. Unless otherwise mentioned, parts are interchangeable. Right and left plant sides are determined by facing the front end of the engine.

### PLANT DATA TABLE

MODEL & SPEC NO. *		ELECTRICAL DATA				
		WATTS**	VOLTS	CYCLES	PHASE	WIRE
<u>HOUSED</u>	<u>UNHOUSED</u>					
50KB-3R/	50KB-3R8/	55,000	120/240	60	1	3
50KB-4R/	50KB-4R8/	55,000	120/208	60	3	4
50KB-4XR/	50KB-4XR8/	55,000	277/480	60	3	4
50KB-5DR/ £	50KB-5DR8/ £	55,000	120/240	60	3	4
50KB-6R/	50KB-6R8/	55,000	480	60	3	3
50KB-9R/	50KB-9R8/	55,000	600	60	3	3
60KB-3R/	60KB-3R8/	65,000	120/240	60	1	3
60KB-4R/	60KB-4R8/	65,000	120/208	60	3	4
60KB-4XR/	60KB-4XR8/	65,000	277/480	60	3	4
60KB-5DR/ £	60KB-5DR/ £	65,000	120/240	60	3	4
60KB-6R/	60KB-6R8/	65,000	480	60	3	3
60KB-9R/	60KB-9R8/	65,000	600	60	3	3
Pennsylvania Approved Plants		See special parts list following the main parts list.				

\* - The Specification Letter advances (A to B, B to C, etc.) with manufacturing changes.

\*\* - Maximum rating is shown. Continuous rating also appears on nameplate.

£ - This is a delta-wound 240-volt model with one phase center-tapped. A limited amount of 1-phase, 120/240-volt power can be utilized together with 3-phase power as long as no terminal current exceeds the rated nameplate current.

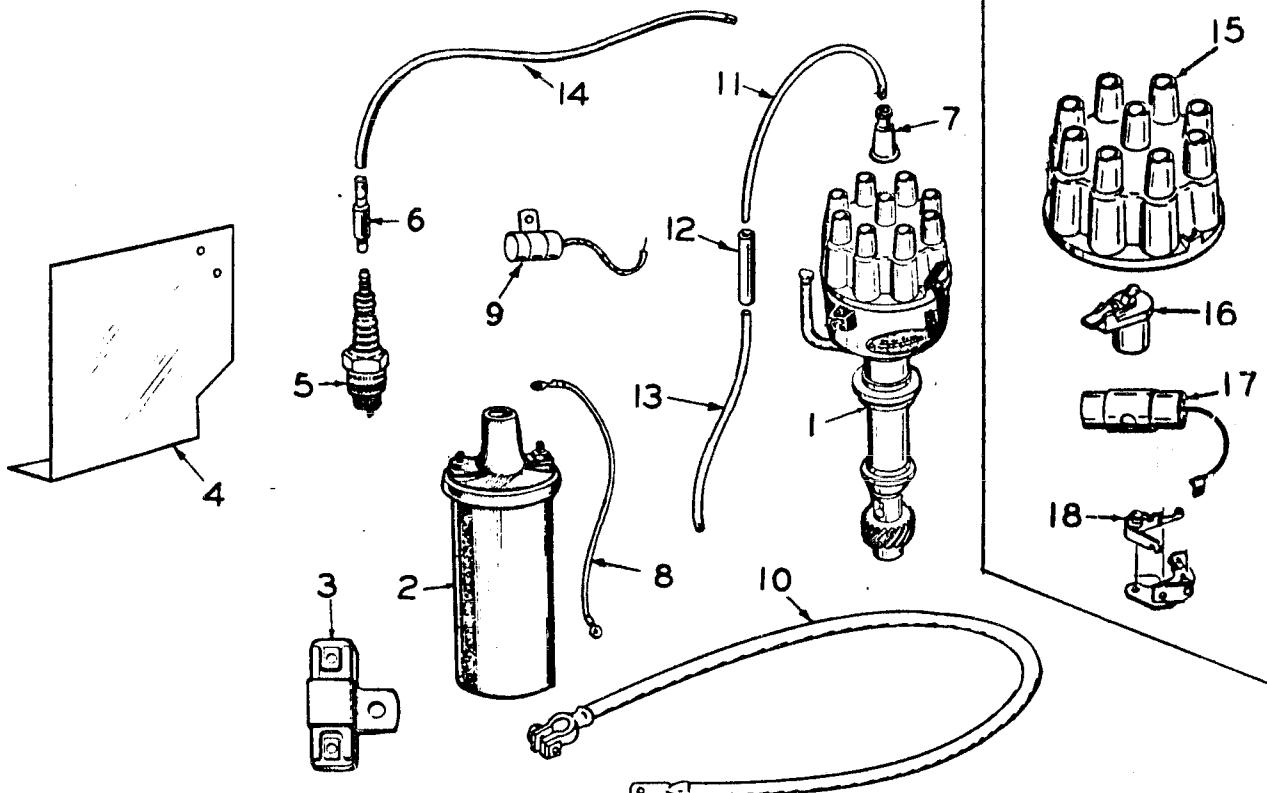
### REPLACEMENT ENGINE

100P440      |      Engine, Replacement (Replaces #100P264, and #100P310) - International Harvester Co.  
Model UV-401, Spec 0-26E.

#### General Description:

Includes - Complete Cylinder Block, Oil Pan, Water Pump, Oil Filter, Governor, Exhaust Manifolds, and Engine Mounts.

Excludes - Carburetor, Fuel Pump, Air Cleaner, Fuel Filter, Starter & Solenoid, Charge Generator, Regulator & Wire Harness, Ignition Coil, Distributor, Spark Plug & Leads, Oil Pressure, Water Temperature Gauge Senders, Oil Pressure Switch, High Water Temperature Cut Off Switch, Anti-Dieseling Control, Radiator, Fan Blades & Belt, Exhaust Header, Muffler and Exhaust Tube.

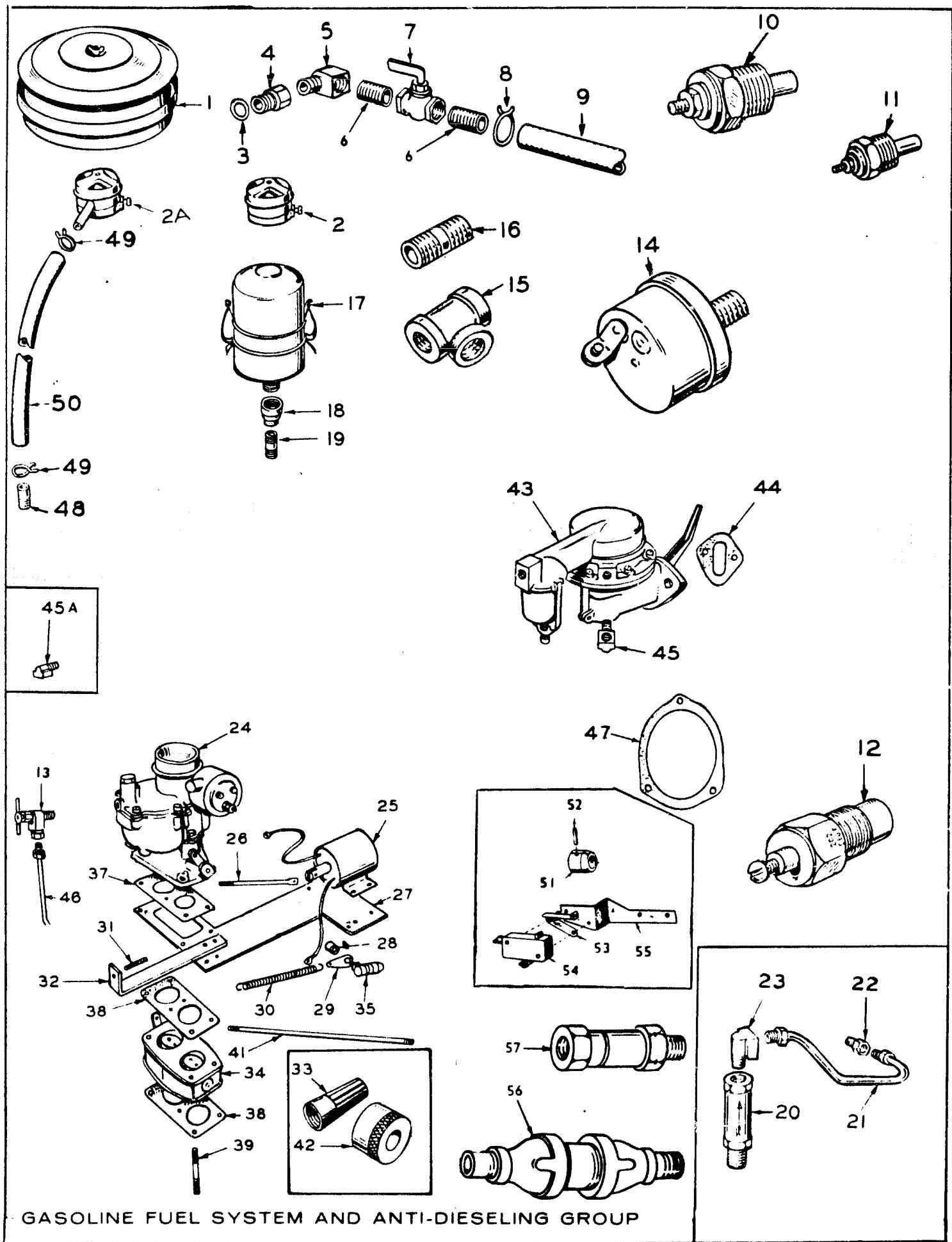


### IGNITION GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	166-282	1	*Distributor Assembly (Delco Remy #1110625)
2	166-280	1	Coil, Ignition - 12 Volt
3	166-281	1	Resistor, Ignition Coil
4	133B158	1	Shield, Ignition Coil Heat.
5	167-127	8	Plug, Spark
6	314P156	8	Suppressor, Spark Plug
7	160A558	10	Nipple, Rubber (9) Distributor, (1) Ignition Coil
8	336A332	1	Lead, Ignition Coil to Resistor - 5-1/4" Long
9	312A58	1	Condenser, Ignition Coil - 0.1 Mfd.
10	CABLE, BATTERY		
	416A77	1	28" Long
	416A21	1	20-1/2" Long

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
11	167A1316	1	Lead, Distributor to Suppressor - 7-1/4" Long
12	314P6	1	Suppressor, Distributor
13	167A1312	1	Lead, Suppressor to Ignition Coil
14	LEAD, SPARK PLUG		
	167A1332	2	Cylinder No. 1 & 7
	167A1333	2	Cylinder No. 2 & 4
	167A1334	1	Cylinder No. 3
	167A1335	1	Cylinder No. 5
	167A1336	2	Cylinder No. 6 & 8
15	166-318	1	Cap, Distributor
16	166-319	1	Rotor, Distributor
17	166-320	1	Condenser, Distributor
18	166-321	1	Point Set, Breaker

\* - For components not listed, contact your nearest Delco Remy dealer or Delco Remy Div. of General Motors Corp., Anderson, Indiana 46011.



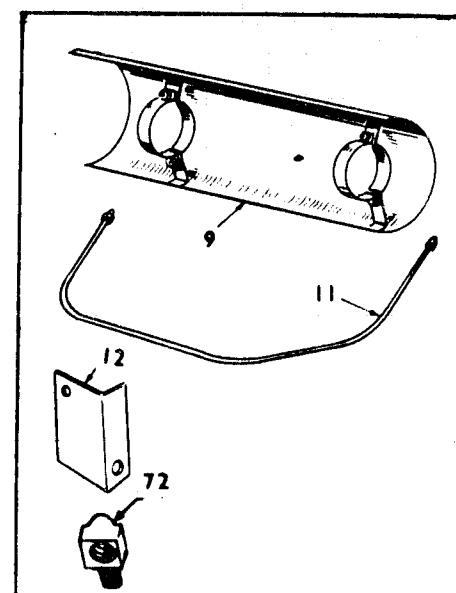
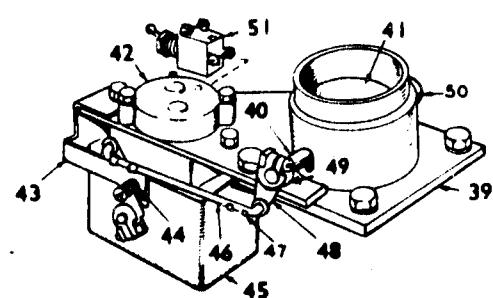
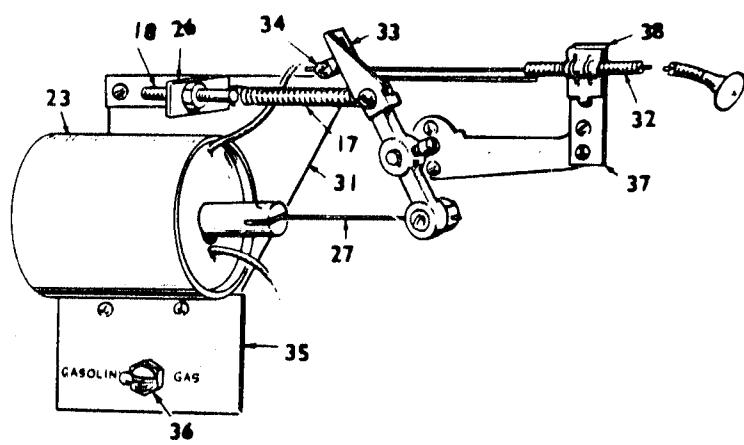
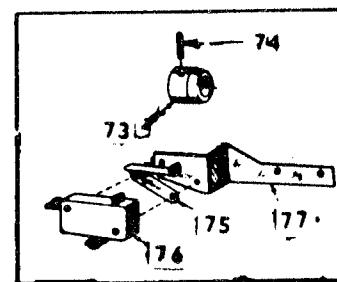
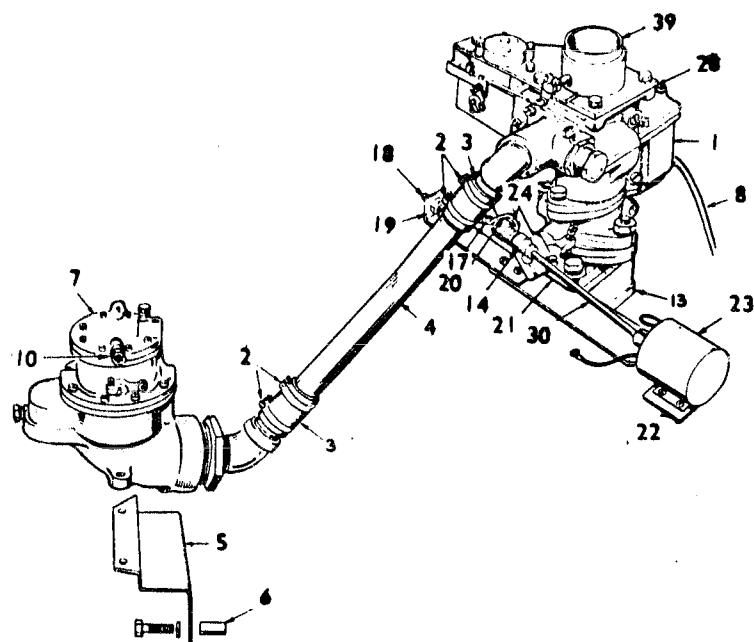
**A5**

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	140C524	1	Cleaner, Air ADAPTER, AIR CLEANER	33	332-614	2	Connector Wire
2	140A525	1	Prior to Spec C and Begin Spec K	34	BODY ASSEMBLY, THROTTLE		
2A	140A549	1	Spec C through J	145B188	1	Prior to Spec H	
3	102A34	1	Gasket, Oil Drain Adapter	145B328	1	Spec H through L	
4	102A33	1	Adapter, Oil Drain	145B410	1	Begin Spec M	
5	502-133	1	Elbow, Oil Drain - 90°	35	150A638	3	Joint, Ball - (1) Solenoid Link, (2) Governor Control Stud
6	505-100	2	Nipple, Oil Drain - 1/2"	37	145A189	1	Gasket, Carburetor to Solenoid Mounting Bracket
7	504P11	1	Valve, Shut-Off - Oil Drain	38	145A185	2	Gasket, Throttle Body - (1) Upper, (1) Lower
8	503-197	1	Clamp, Oil Drain Hose	39	520A457	4	Stud, Carburetor & Throttle Body Mounting (5/16 x 3-1/8)
9	503-348	1	Hose, Oil Drain	41	STUD, GOVERNOR CONTROL		
10	193A108	1	Sender, Oil Pressure Gauge	520A537	1	Prior to Spec H - 1/4 x 9-3/8"	
11	193A104	1	Sender, Water Temp. Gauge	520A629	1	Spec H through L - 1/4 x 9-7/8"	
12	309A178	1	Switch, Water Temp. Cut-Off	520A517	1	Begin Spec M - 1/4 x 7"	
13	504-85	1	Valve, Shut-Off - Carb. Inlet - Begin Spec M	42	141A372	1	Knob, Choke - Carburetor
14	309B64	1	Switch, Oil Pressure	43	149C730	1	Pump Assembly, Fuel
15	505-59	1	Tee, Pipe (1/8") Oil Pressure Switch and Oil Gauge Sender Mounting	44	149A736	1	Gasket, Fuel Pump Mounting ELBOW, INVERTED MALE
16	505-104	1	Nipple, Close (1/8" x 3/4") Oil Pressure Tee to Block	45	502-4	1	Fuel Pump Outlet
17	140C518	1	Cleaner, Crankcase Breather	45A	502-4	1	Carburetor Inlet - Prior to Spec M
18	505-369	1	Coupling, Reducer (1/2" to 1/4") Breather Cleaner to Mounting Nipple	46	159C685	1	Line, Fuel - Pump to Carburetor
19	505-99	1	Nipple, Close (1/4" x 7/8") Breather Cleaner to Cylinder Head Cover Mounting	47	151B184	1	Gasket, Governor Flange
20	123A604	1	Valve, Metering - Breather System - Prior to Spec C	48	505-10	1	Nipple, Half - 1/4 x 1" - Breather Hose Adapter - Begin Spec C
21	123B621	1	Line, Breather - Metering Valve to Intake Manifold - Prior to Spec C	49	503-131	2	Clamp, Breather Hose - Begin Spec C
22	502-31	1	Connector, Inverted Male - Breather Line to Intake Manifold - Prior to Spec C	50	503-119	1	Hose, Breather - Begin Spec C
23	502-39	1	Elbow, Inverted Male - Breather Line to Metering Valve - Prior to Spec C	51	309A132	1	Cam, Micro Switch - Begin Spec F
24	141C636	1	Carburetor Assembly - (Order Component parts by description for Carburetor Model 28ADA10C from Zenith Carburetor Div. of Bendix Aviation Corp., Detroit, Michigan)	52	516-86	1	Pin, Roll - 1/8" x 3/4" - Begin Spec F
				53	309P133	1	Actuator, Micro Switch - Begin Spec F
25	307B259	1	Solenoid and Lead Assembly, Anti-Dieseling	54	309A155	1	Switch, Micro - Begin Spec F
26	145A124	1	Link, Solenoid	55	309A131	1	Bracket, Micro Switch Mounting - Begin Spec F
27	145A186	1	Bracket, Solenoid Mounting	56	123A904	1	Flame Arrestor Assy. - Spec H through J
28	150A302	1	Bushing, Throttle Spring Link to Ball Joint	57	123A960	1	Crankcase Vent-Begin Spec K
29	145A118	1	Link, Throttle Spring	193I90R91	1	★Filter Assembly, Oil - Includes Element (Not Illustrated)	
30	145A158	1	Spring, Throttle	193I87R91	1	★Element, Oil Filter (Not Illustrated)	
31	150A96	1	Stud, Throttle Spring Adjusting	GD422C7545	1	†Governor Assembly - Prior to Spec D (Not Illustrated)	
32	145A187	1	Bracket, Throttle Spring	GD427C7145	1	†Governor Assembly - Spec D through G (Not Illustrated)	
				347003R91	1	★Governor Assembly - Spec H through L (Novi #4050078) (Not Illustrated)	
				151-371	1	* Governor Assembly - Begin Spec M (Pierce) (Not Illustrated)	
				141-640	1	Repair Kit, Carburetor	
				141-641	1	Gasket Kit, Carburetor	

\* - Part number is International, order direct from nearest dealer.  
† - Part number is Hoof, order direct from Hoof Products Co., Chicago, Ill.

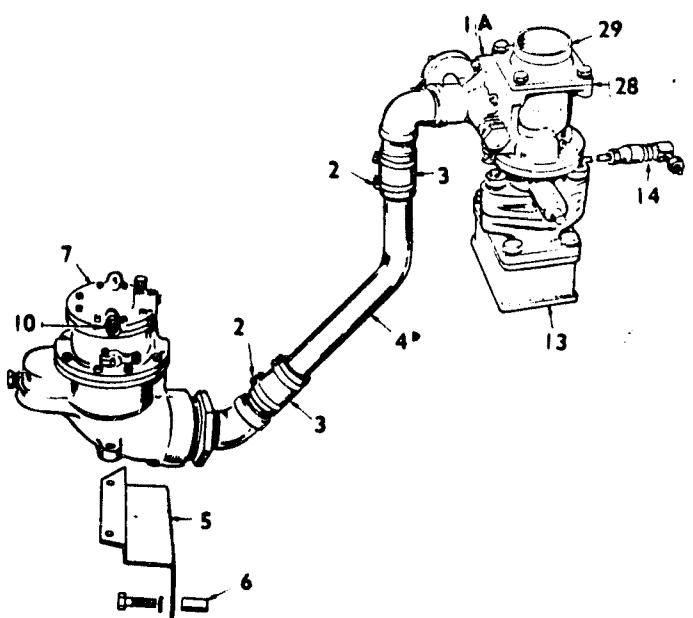
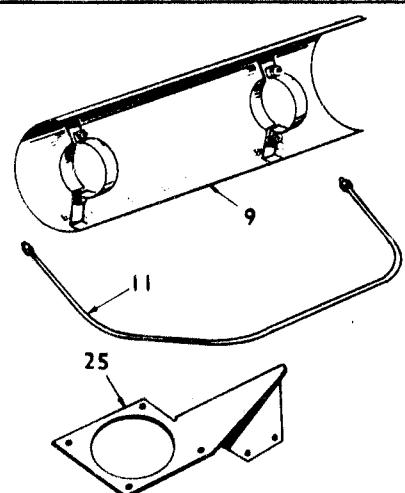
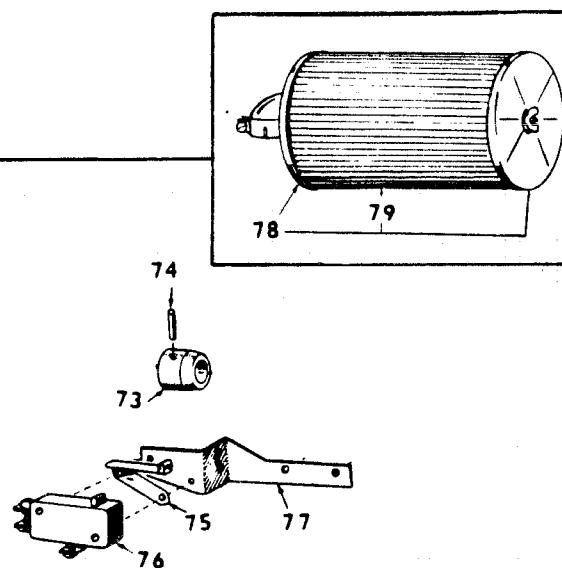
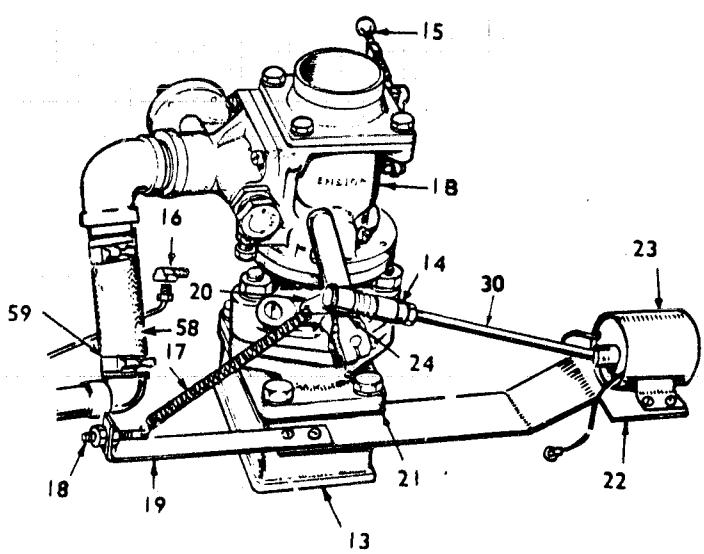
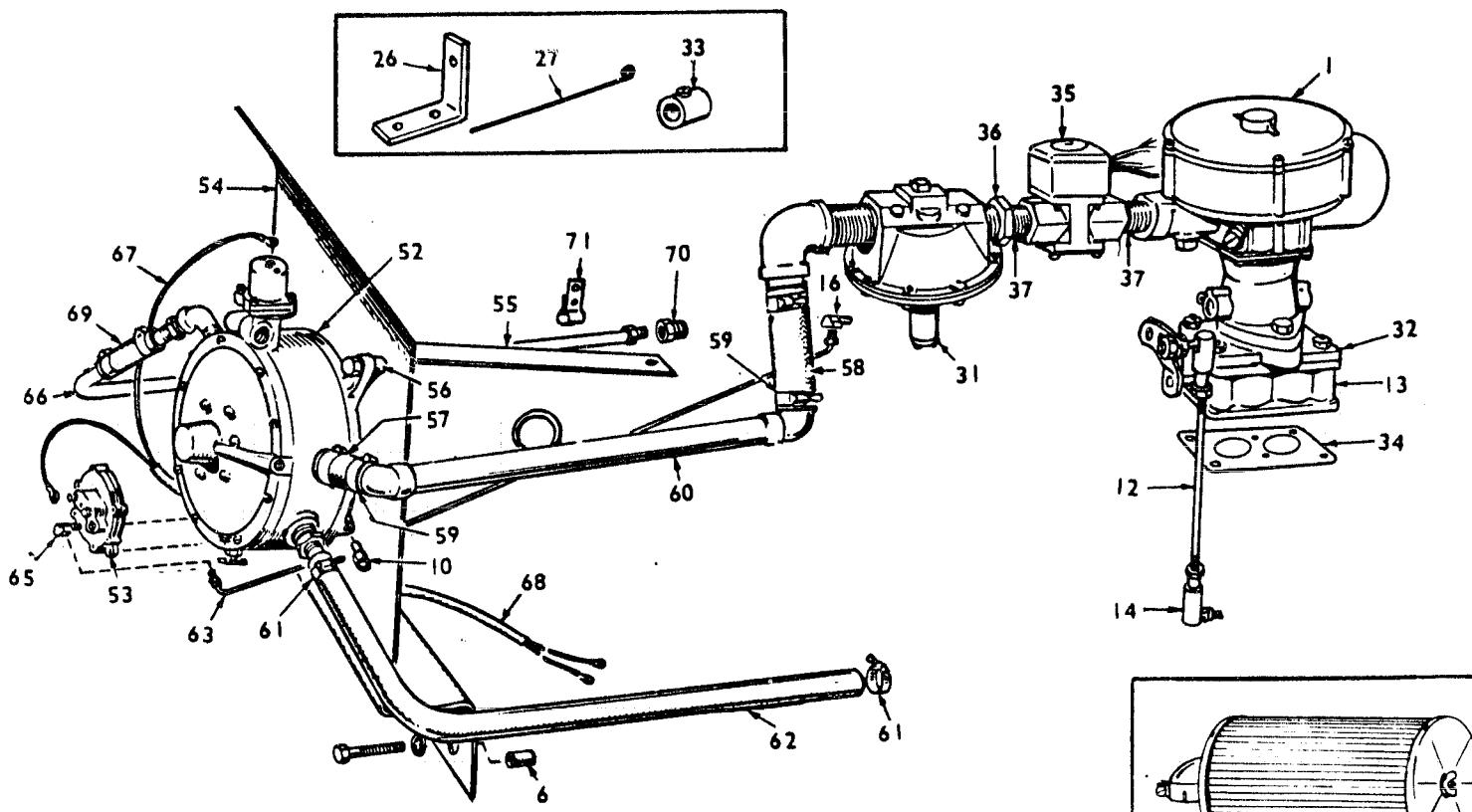
\* - Order parts or components for this governor (International #678045C91) from the International Harvester Co., 401 North Michigan Ave., Chicago, Illinois 60611.

**SPECIAL FUEL SYSTEM GROUP (GAS-GASOLINE)**  
 (Spec A through K)-OPTIONAL



<b>REF.</b>	<b>PART NO.</b>	<b>QTY. USED</b>	<b>PART DESCRIPTION</b>	<b>REF.</b>	<b>PART NO.</b>	<b>QTY. USED</b>	<b>PART DESCRIPTION</b>
1	* CARBURETOR - GAS-GASOLINE FUEL			27	145A205	1	Link, Solenoid to Choke
	148C371	1	Prior to Spec E (Ensign #9235)	28	145A195	1	Gasket - Carburetor Air Inlet or Choke
	148C431	1	Begin Spec E (Ensign #CCA200A116)	30	145A124	1	Link, Solenoid
2	503-107	4	Clamp, Hose	31	145C203	1	Bracket, Choke Solenoid
3	503-355	2	Hose - 1-1/4 I.D. x 3" Long	32	153-110	1	Choke, Manual
4	148A381	1	Tube, Fuel Line - Regulator to Carburetor	33	145A213	1	Extension, Choke Arm
5	148C365	1	Bracket, Regulator Mounting	34	145A165	1	Stop, Choke Wire
6	403A533	2	Spacer, Regulator Mounting Bracket	35	308A150	1	Bracket, Switch Mounting
7	148A310	1	*Regulator (Ensign #RVE200A104-2)	36	308P88	1	Switch, Choke (Gas or Gasoline)
8	149A768	1	Line, Fuel Pump to Carburetor	37	153A274	1	Bracket, Choke Wire
9	148C383	1	Shield Assembly, Heat	38	518B176	1	Clip, Choke Wire
10	148A107	1	Vent Assembly, Gas Regulator	39	153B292	1	Adapter Assembly, Choke
11	130B451	1	Line, Oil Cooler to Cylinder Block	40	153A293	1	Shaft, Choke
12	153A275	1	Bracket, Choke	41	153A281	1	Plate, Choke
13	BODY ASSEMBLY, THROTTLE			42	153A49	1	Cover Assembly, Choke (12 Volt)
	145A188	1	Prior to Spec H	43	153A295	1	Bracket, Choke Lock
	145B328	1	Spec H through K	44	232A979	1	Spring, Choke Lock
14	150A638	As Req.	Joint, Ball	45	153A213	1	Choke, Automatic
17	145A158	2	Spring, Throttle	46	153A294	1	Rod, Choke
18	150A96	2	Stud, Throttle Spring Adjusting	47	518-5	2	Clip, Choke Rod End
19	145A187	1	Bracket, Throttle Spring	48	153A283	1	Arm, Choke Over-Ride
20	145A118	1	Link, Throttle Spring	49	153A282	1	Arm, Choke
21	145A189	1	Gasket, Carburetor Solenoid Mounting Bracket	50	148A430	1	Counterweight, Choke Shaft
22	145C202	1	Bracket, Solenoid Mounting	51	308A68	1	Switch, Choke
23	307B259	1	Solenoid & Lead Assembly, Anti-Dieseling	72	502-42	1	Elbow, Inverted Male - Carb. Inlet
24	150A302	1	Bushing, Throttle Spring Link to Ball Joint	73	309A132	1	Cam, Micro Switch - Begin Spec F
26	145A194	1	Bracket, Choke Spring	74	516-86	1	Pin, Roll - 1/8" x 3/4" - Cam - Begin Spec F
				75	309P133	1	Actuator, Micro Switch - Begin Spec F
				76	309A155	1	Switch - Micro - Begin Spec F
				77	309A131	1	Bracket, Micro Switch Mounting - Begin Spec F

\* - For components contact your nearest Ensign Carburetor dealer or Ensign Carburetor Div. of American Bosch, 930 North York Road, Room 206, Hinsdale, Illinois.



SPECIAL FUEL SYSTEM GROUP (Gas Only and LPG Only) -OPTIONAL

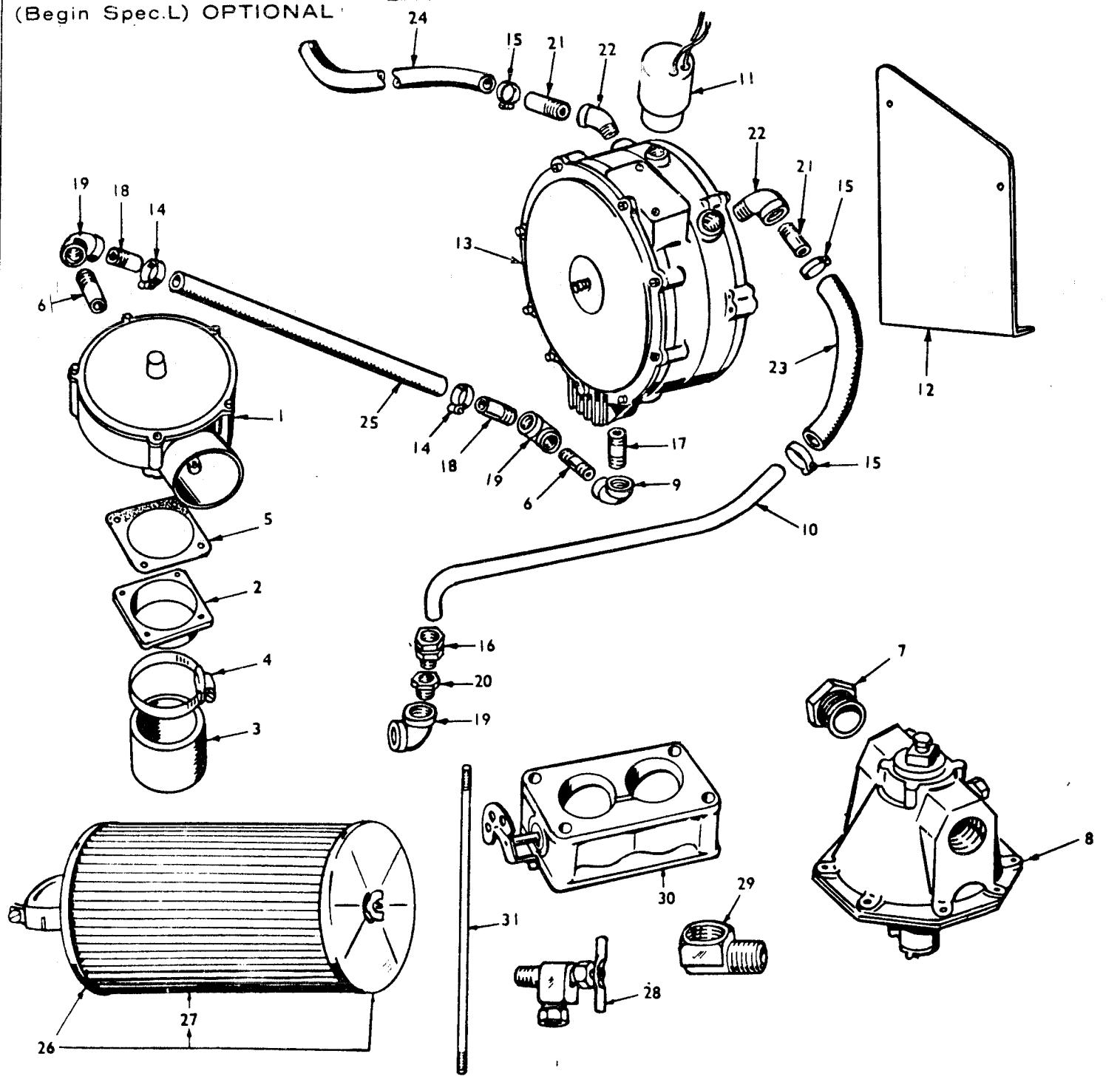
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	148P592	1	**Carburetor - Begin Spec K (Impco #200)	23	307B259	1	Solenoid & Lead Assembly, Anti-Dieseling - LPG Plants Spec C through K - Natural Gas Plants Prior to Spec E
IA	*CARBURETOR - NATURAL GAS FUEL			24	150A302	1	Bushing, Throttle Spring Link to Ball Joint - LPG Plants Spec C through K
	148C372	1	Prior to Spec E (Ensign #9263)	25	145C193	1	Bracket, Choke Sol. - Natural Gas Plants Prior to Spec E
	148C433	1	Spec E through J (Ensign #200A120)	28	145A195	1	Gasket - Carburetor Air Inlet or Choke - Natural Gas Fuel Plants
IB	*CARBURETOR - LPG FUEL			29	153B302	1	Choke Assembly, Air - Natural Gas Plants - Spec E through J
	148C372	1	Prior to Spec C (Ensign #9263)	30	145A124	1	Link, Solenoid - LPG Fuel Plants - to Spec L
	148C424	1	Spec C and D (Ensign #9496)	31	VALVE, THERMAL		Natural Gas Plants
	148C434	1	Spec E through K (Ensign #9505)	148-601		1	LPG Fuel Plants
2	503-107	4	Clamp, Hose - Natural Gas Fuel Plants - Prior to Spec K	32	145P358	1	Adapter, Carburetor - Begin Spec K
3	503-355	2	Hose - 1-1/4 I.D. x 3" Lg. Natural Gas Fuel Plants - Prior to Spec K	33	148P620	1	Collar, Shaft - Spec K only
4	148A382	1	Tube, Fuel Line - Regulator to Carburetor - Prior to Spec K	34	145A185	2	Gasket, Throttle Body - Begin Spec K
5	148C365	1	Bracket, Regulator Mounting - Natural Gas Fuel Plants	35	307P312	1	Valve, Solenoid (12 V) - LPG Plants Begin Spec L
6	SPACER, REGULATOR MOUNTING BRACKET			36	505-129	1	Bushing, Reducer (1 x 3/4) - Thermal Valve Outlet
	403A533	2	Prior to Spec H	37	505-102	2	Nipple (3/4 x 1-3/8") - Solenoid Valve Inlet & Outlet - LPG Plants Begin Spec L
	403A851	2	Begin Spec H	52	148A368	1	*Regulator, LPG - LPG Plants (Ensign #RDB220A2)
7	148A310	1	Regulator, Gas - Natural Gas Fuel Plants - Prior to Spec K	53	148A367	1	Switch, Vacuum - Regulator - LPG Plants - Prior to Spec H
9	148C383	1	Shield Assembly, Heat - Natural Gas Fuel Plants - Prior to Spec K	54	148C366	1	Bracket, Regulator - LPG Plants
10	148A107	1	Vent Assembly, Gas Regulator - Prior to Spec L	55	148C369	1	Brace, Regulator Mounting - LPG Plants
11	130B451	1	Line, Oil Cooler to Cylinder Block - Prior to Spec K	56	110A300	3	Spacer, Regulator to Bracket Mounting - LPG Plants
12	STUD, THROTTLE			57	503-350	1	Hose, Fuel - 3" Lg. - LPG Plants
	520A629	1	Prior to Spec M	58	503-351	1	Hose, Fuel - 8" Lg. - LPG Plants
	520A517	1	Begin Spec M	59	503-189	4	Clamp, Fuel Hose - LPG Plants
13	BODY ASSEMBLY, THROTTLE			60	148A385	1	Line, Fuel - LPG Plants
	145A188	1	Prior to Spec H	61	503A49	4	Clamp, Water Hose - LPG Plants
	145B328	1	Spec H through L	62	503-352	1	Hose, Water Inlet - 20" Lg. - LPG Plants
	145B410	1	Begin Spec M	63	LINE, VACUUM SWITCH - LPG PLANTS		
14	150A638	As Req.	Joint, Ball	148A414		1	Prior to Spec C
15	153A85	1	Rod Assembly, Choke - LPG Plants Prior to Spec E	148A378		1	Spec C through G
16	ELBOW, VACUUM SWITCH LINE TO CARBURETOR - LPG PLANTS			65	502-2	1	Elbow, Vacuum Line to Vacuum Switch - LPG Plants - Prior to Spec H
	502-2	1	Prior to Spec C	66	131A122	1	Line, Water Outlet - LPG Plants
	502-41	1	Spec C through G	67	336A1093	1	Lead, Solenoid to Vacuum Switch - LPG Plants - Prior to Spec H
17	145A158	1	Spring, Throttle - LPG Plants Spec C through K and Natural Gas Plants Begin Spec E	68	338B224	1	Harness, Wiring - LPG Plants - Prior to Spec H
18	150A96	1	Stud, Throttle Spring Adjusting LPG Spec C through K and Natural Gas Plants Begin Spec E				
19	145A187	1	Bracket, Throttle Spring - LPG Plants Spec C through K				
20	145A118	1	Link, Throttle Spring - LPG Plants Spec C through K				
21	145A189	1	Gasket, Carburetor to Solenoid Mounting Bracket - LPG Plants Spec C through K				
22	145A186	1	Bracket, Solenoid Mtg. - LPG Plants Spec C through K				

\*\* - For components contact your nearest Impco dealer or Impco Division, 16916 Gridley Place, Cerritos, California 90701.

\* - For components contact your nearest Ensign Carburetor dealer or Ensign Carburetor Div. of American Bosch, 930 North York Road, Room 206, Hinsdale, Illinois.

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
69	503-353	1	Hose, Water Outlet - 2" Lg. - LPG Plants	75	309P133	1	Actuator, Micro Switch - Spec F through K
70	502-227	1	Connector, Water Outlet Hose- LPG Plants	76	309A155	1	Switch, Micro - Spec F through K
71	I30B450	1	Bracket, Water Line - LPG Plants	77	309A131	1	Bracket, Micro Switch Mounting - Spec F through K
73	309A132	1	Cam, Micro Switch - Spec F through K	78	I40P851	1	Cleaner, Air - Gas only Plants - Begin Spec K
74	516-86	1	Pin, Roll - 1/8" x 3/4" - Cam - Spec F through K	79	I40-871	1	Element, Air Cleaner --Gas only Plants - Begin Spec K

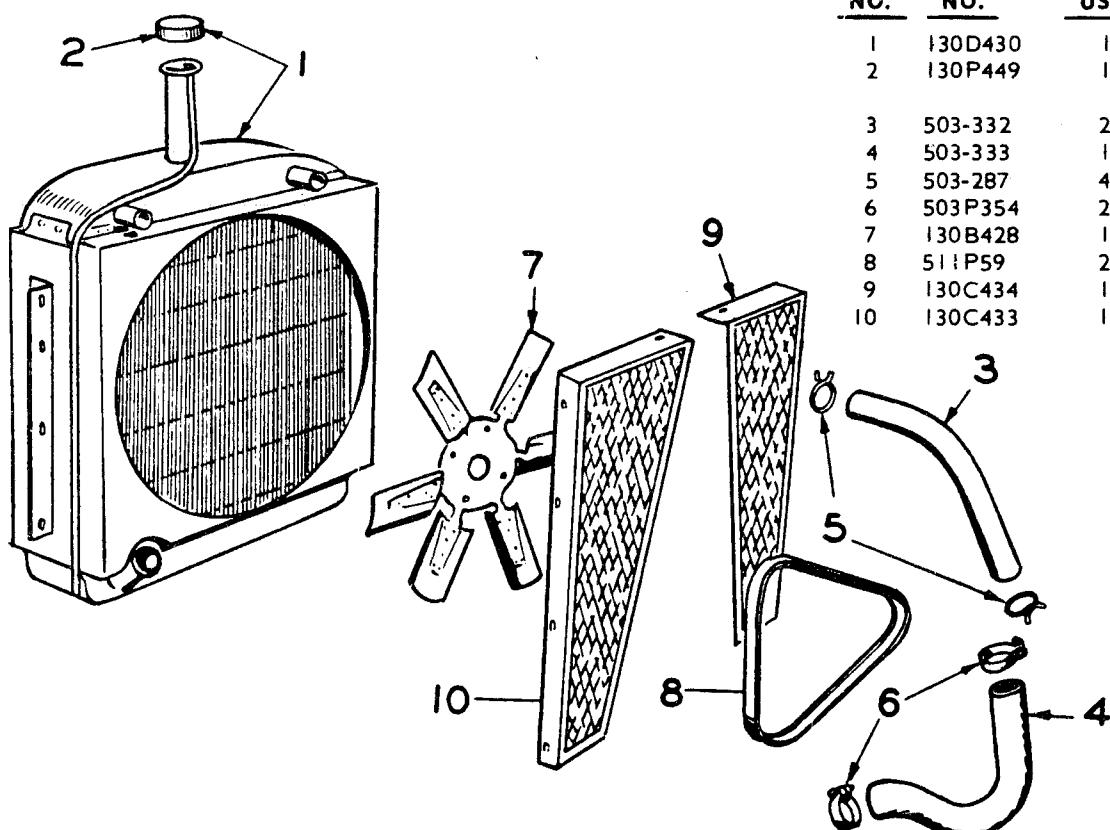
SPECIAL FUEL SYSTEM GROUP-Gas-Gasoline and LPG-Gasoline  
(Begin Spec.L) OPTIONAL



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	148P598	1	**Carburetor, Gas (Mixer) (Impco #200)	19	505-132	3	Elbow (3/4") - LPG-Gasoline only
2	145P396	1	Adapter, Carburetor	20	505-21	1	Bushing, Reducer (3/4 x 1/2") - LPG-Gasoline only
3	503-550	1	Hose, Adapter	21	505-135	2	Nipple, Half (3/8 x 1-1/4") - LPG-Gasoline only
4	503-354	2	Clamp, Hose	22	505-119	2	Elbow, Street (3/8") - LPG- Gasoline only
5	*	1	Gasket, Carburetor Adapter	23		As Req.	Hose (17" of Bulk Hose #503-386) - LPG-Gasoline only
6	505-102	1	Nipple, Gas Regulator (3/4 x 1-3/8")	24		As Req.	Hose (8-1/2" of Bulk Hose #503-386) - LPG-Gasoline only
7	505-129	1	Bushing, Reducer (1 x 3/4") - Gas-Gasoline only	25		As Req.	Hose (11" of Bulk Hose #503-249) - LPG-Gasoline only
8	148P601	1	**Regulator, Gas - Gas-Gasoline only (Impco #T-30)	26	140P851	1	Cleaner, Air
9	505-356	1	Elbow, Reducer (1 x 3/4") LPG-Gasoline only	27	140-871	1	Element, Air Cleaner
10	131B192	1	Line, Water - LPG-Gasoline only	28	502-42	1	Elbow, Inverted Male - Carb. Inlet - Prior to Spec M - Gas-Gasoline only
11	307P268	1	Valve, Solenoid - LPG-Gasoline only	29	504-85	1	Valve, Shut-Off - Carb. Inlet - Begin Spec M - Gas-Gasoline only
12	148-631	1	Bracket, Converter - LPG- Gasoline only	30	BODY ASSEMBLY, THROTTLE	- Gas-Gasoline Only	
13	148C625	1	**Converter - LPG-Gasoline only (Impco Mdl. EB)	145B328		Spec L Only	
14	503-382	2	Clamp, Hose - LPG-Gasoline only	145B410		Begin Spec M	
15	503-189	4	Clamp, Hose - LPG-Gasoline only	31	STUD, THROTTLE	- Gas-Gasoline Only	
16	502-227	1	Connector - LPG-Gasoline only	520A629		Spec L Only	
17	505-107	1	Nipple (1 x 2") - LPG-Gasoline only	520A517		Begin Spec M	
18	505-71	2	Nipple, Half (3/4 x 1-1/4") - LPG-Gasoline only				

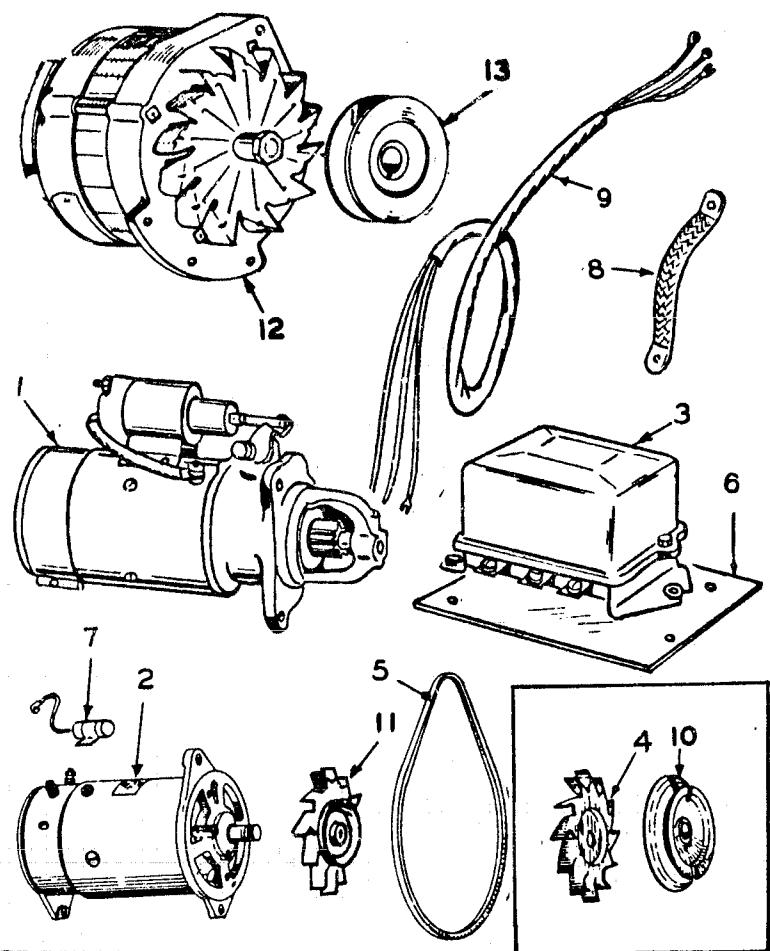
\* - Order by description giving complete Model, Spec, and Serial Number.  
 \*\* - For components contact your nearest Impco dealer or Impco Division, 16916 Gridley Place, Cerritos, California 90701.

#### COOLING SYSTEM GROUP



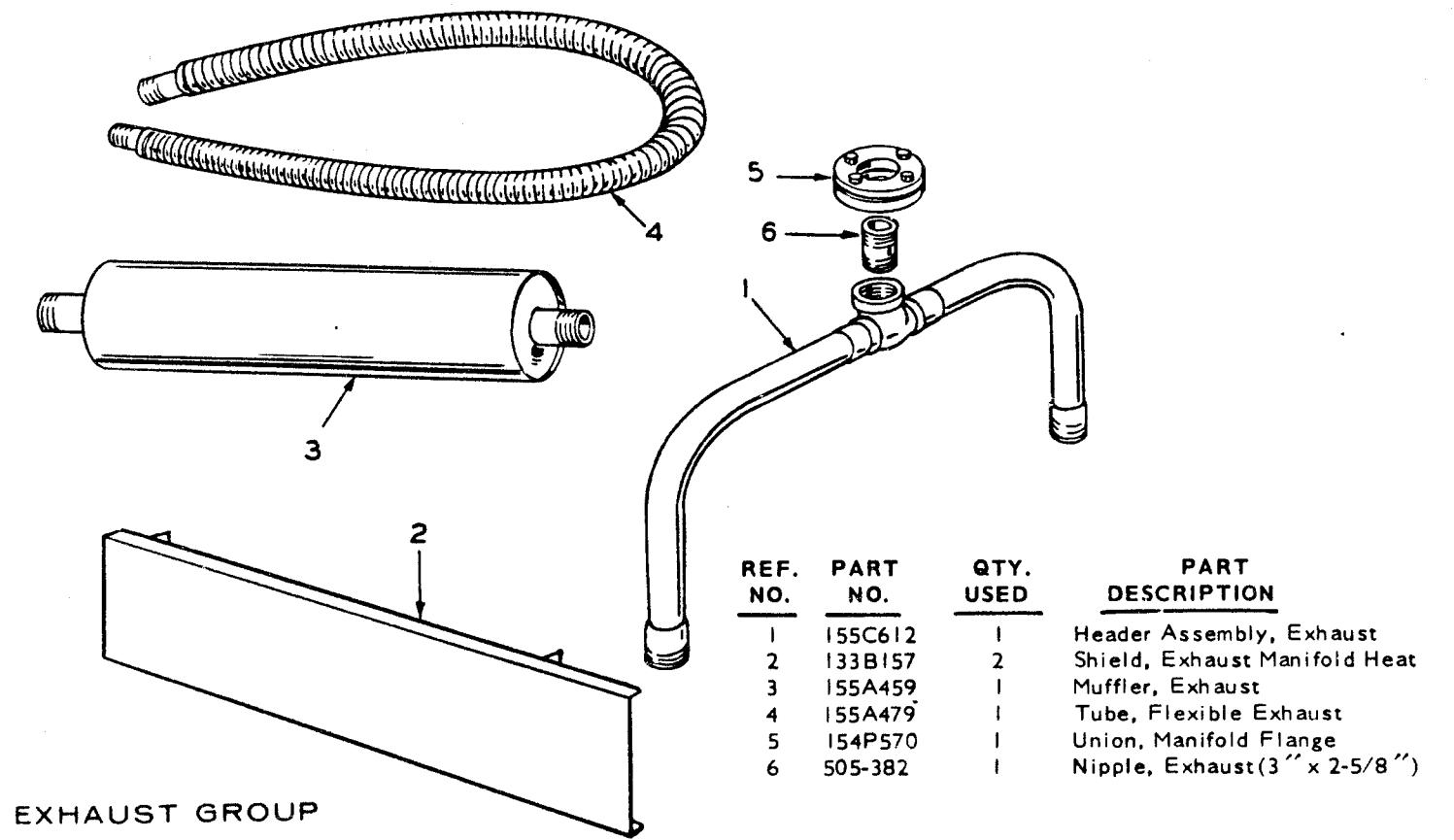
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	130D430	1	Radiator - Includes Cap
2	130P449	1	Cap, Radiator - 7 lbs. Pressure
3	503-332	2	Hose, Radiator - Upper
4	503-333	1	Hose, Radiator - Lower
5	503-287	4	Clamp, Hose - Upper Hoses
6	503P354	2	Clamp, Hose - Lower Hose
7	130B428	1	Fan Only, Cooling
8	511P59	2	Belt, Fan Drive
9	130C434	1	Guard, Fan - LH Side
10	130C433	1	Guard, Fan - RH Side

**STARTING MOTOR  
AND  
BATTERY CHARGE GENERATOR GROUP**



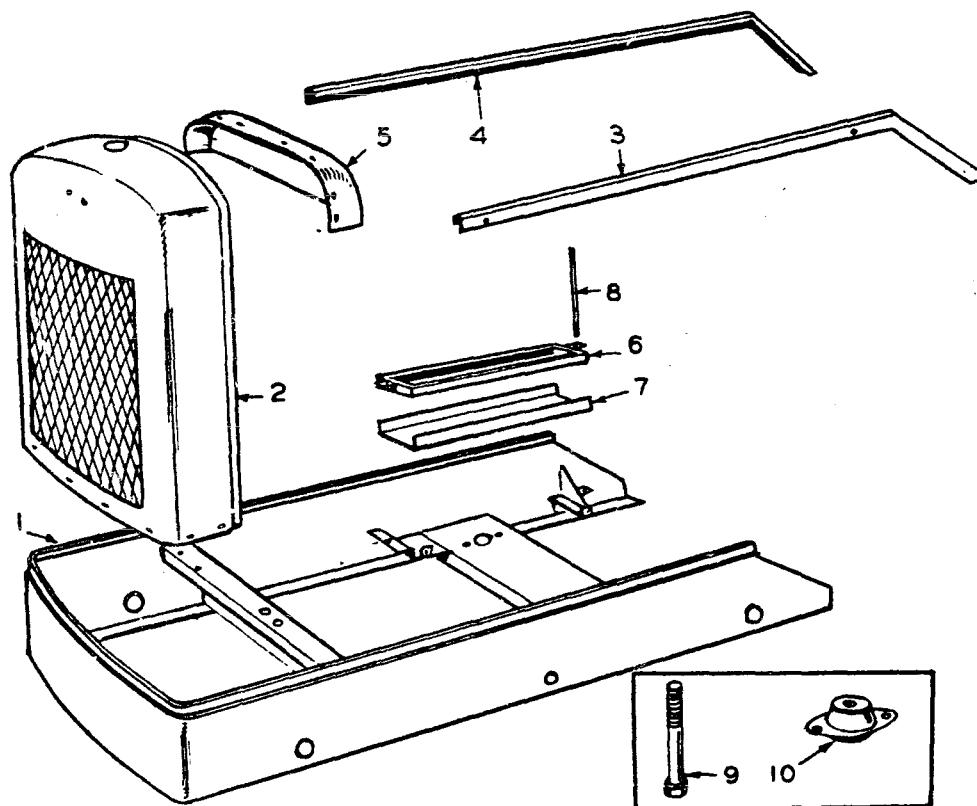
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	191D486	1	**Starter - 12-Volt (Delco Remy #1113167-H)
2	191P251	1	**Generator, 12-Volt - To Spec K (Delco Remy #1102044)
3	191A228	1	Regulator, Voltage - Prior to Spec K
4	191A253	1	Fan, Generator Pulley - Spec A Models Only
5	511P25	1	Belt, Generator
6	191A267	1	Bracket, Voltage Regulator Mounting - Prior to Spec K
7	312A58	2	Condenser - 0.1 Mfd. -
8	337A49	2	(1) Charge Generator, (1) Voltage Regulator
9	338B208	1	Strap, Ground (Braided) - 8-7/16" Long
10	191C266	1	Harness Assembly, Charge Regulator - To Spec K
11	191C296	1	Pulley, Generator - Spec A Models Only
12	191B665	1	Fan and Pulley, Spec B through J
13	191B649	1	*Alternator, Charging (Includes Regulator) - Begin Spec K (Motorola #70D44039B)
			Pulley, Alternator -Begin Spec K

- \* - For components contact your nearest Motorola dealer or Motorola Automotive Products Inc., 9401 W. Grand Ave., Franklin Park, Illinois 60131.
- \*\* - For components contact your nearest Delco Remy dealer or Delco Remy Div. of General Motors Corp., Anderson, Indiana 46011.



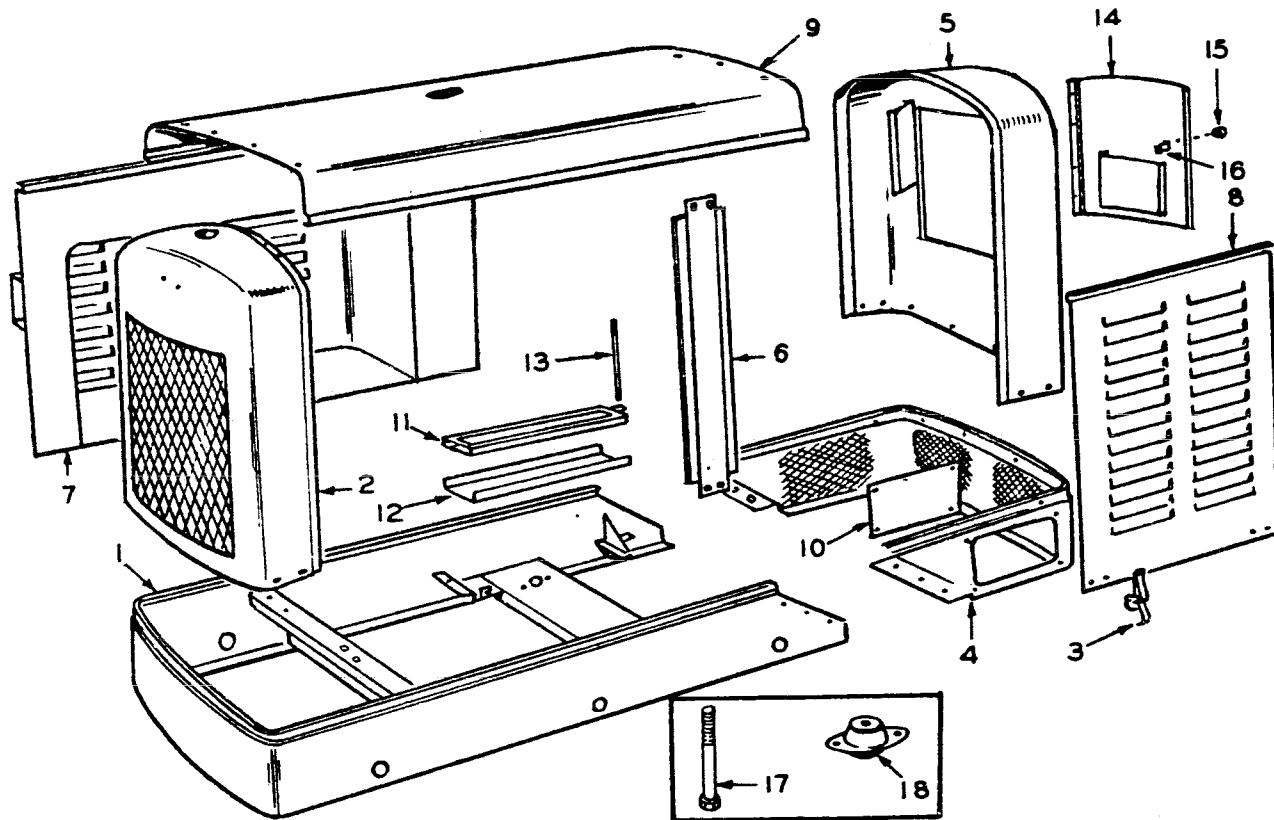
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	155C612	1	Header Assembly, Exhaust
2	133B157	2	Shield, Exhaust Manifold Heat
3	155A459	1	Muffler, Exhaust
4	155A479	1	Tube, Flexible Exhaust
5	154P570	1	Union, Manifold Flange
6	505-382	1	Nipple, Exhaust(3" x 2-5/8")

**EXHAUST GROUP**



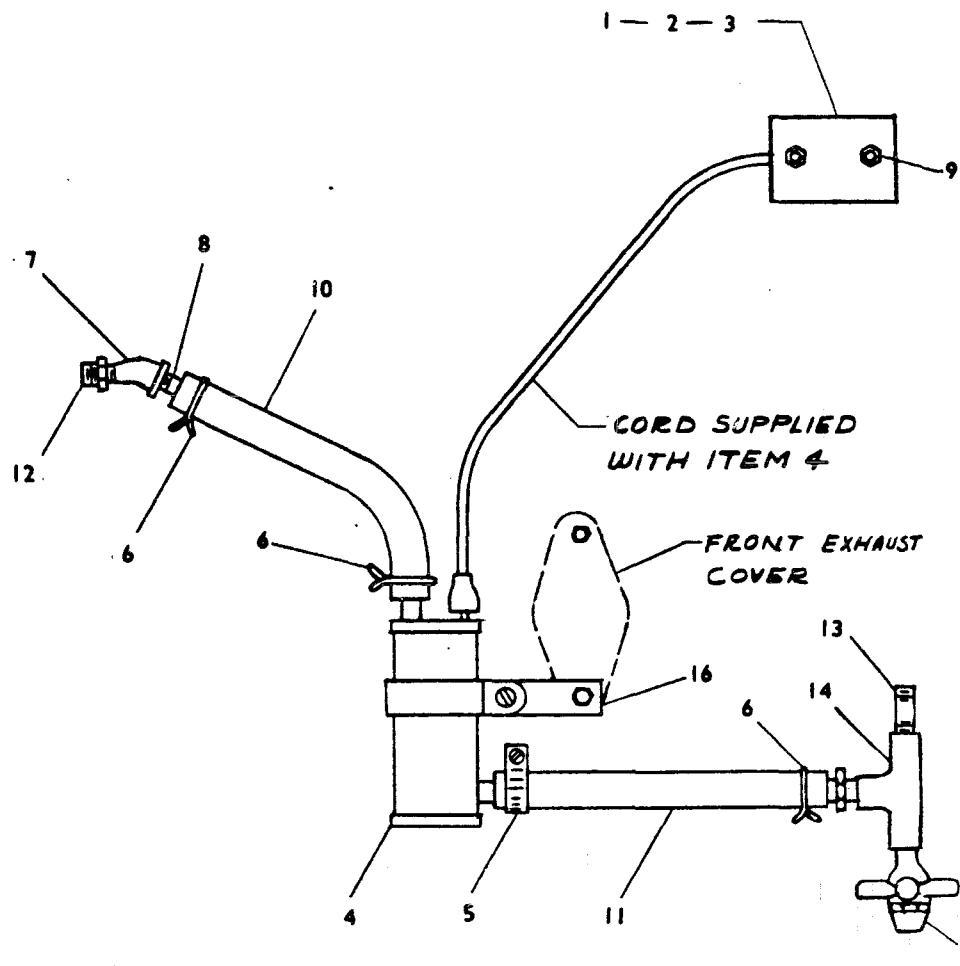
MOUNTING GROUP (Unhoused Plants Only)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	403D555	1	Chassis, Mounting
2	405D1153	1	Panel, Front End
3	403C562	1	Trim, Chassis - RH Side
4	403C563	1	Trim, Chassis - LH Side
5	405C1165	1	Hood, Radiator Extension
6	416B338	1	Frame, Battery Hold-down
7	416B358	1	Tray, Battery
8	520A231	2	Stud, Battery Hold-down
9	402A214	2	Bolt, Front Engine Mounting
10	402P209	2	Rubber, Generator End Mounting



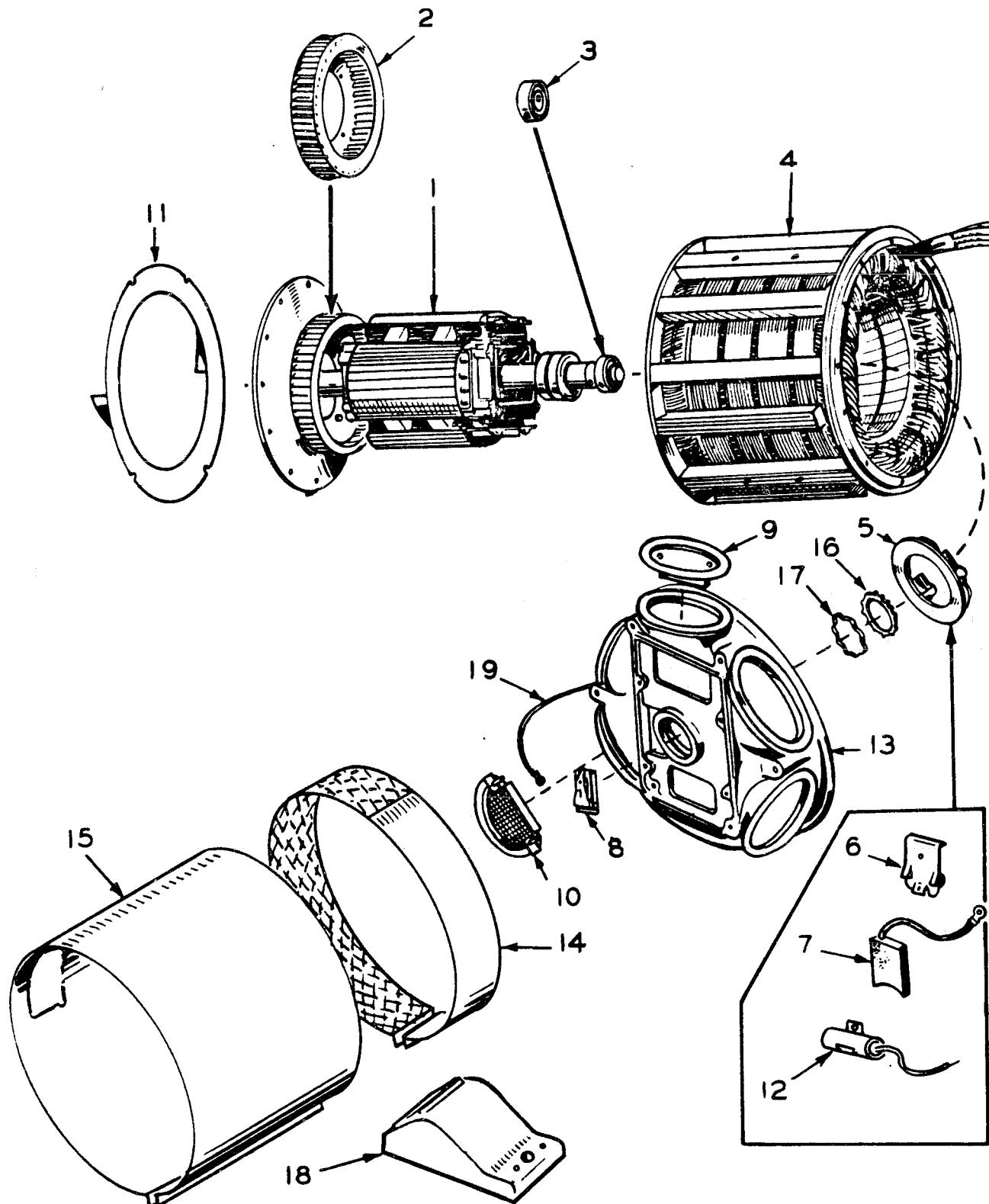
### HOUSING GROUP (Housed Plants Only)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	403D555	1	Chassis, Mounting
2	405D1153	1	Panel, Front
3	406A105	8	Clamp, Hold-down - Side Panels
4	403D556	1	Chassis, Mounting - Rear Section
5	405D1154	1	Panel, Rear - Excludes Door
6	405C1169	2	Support, Top
7	405D1155	2	Panel, Door - Housing Side - Includes Handles
8	405C1151	2	Panel, Side
9	405D1156	1	Panel, Top
10	403B566	1	Panel, Chassis
11	416B338	1	Frame, Battery Hold-down
12	416B358	1	Tray, Battery
13	520A231	2	Stud, Battery Hold-down
14	405B932	1	Door, Rear Panel Control
15	406-2	1	Knob, Panel Door
16	406-88	1	Catch, Panel Door
17	402A214	1	Bolt, Front Engine Mounting
18	402P209	2	Rubber, Generator End Mounting



WATER JACKET HEATER GROUP- OPTIONAL

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	309P29	1	Thermostat
2	333A12	1	Box, Thermostat
3	333A13	1	Cover, Thermostat Box
4	333P52	1	Heater, Tank Type
5	503-183	1	Clamp, Hose
6	503-131	3	Clamp, Hose
7	505-119	1	Elbow, Street (3/8" x 45°)
8	505-135	1	Nipple, Half(3/8 x 1-1/2")
9	520A446	2	Stud, Thermostat Box Mtg.
10		1	Hose (Order 8" of Bulk Hose #503P386)
11		1	Hose (Order 11" of Bulk Hose #503P386)
12	505-19	1	Bushing, Reducer (1/2 x 3/8")
13	505-101	1	Nipple, Close (1/4")
14	504-184	1	Tee, Pipe (1/4")
15	504-3	1	Valve, Drain
16	130A755	1	Bracket, Heater Support



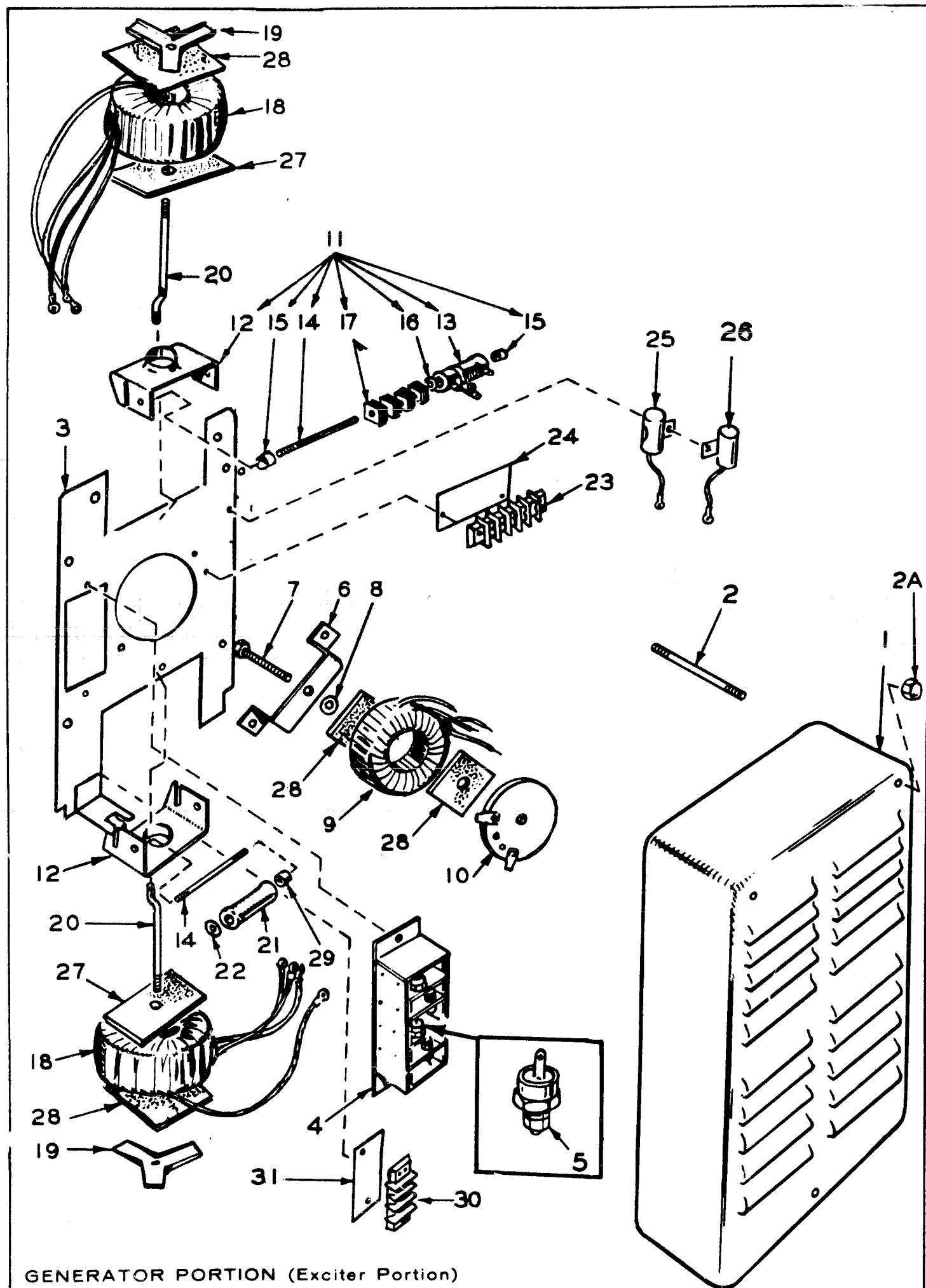
GENERATOR GROUP (Alternator Portion)

**NOTE:** Output Terminal Box, Cover and Internal Parts are listed with the AC Output Control Group (Mounts on Side of Generator).

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	*	1	Rotor Assy., Wound - Includes Bearing, Blower and Drive Assembly
2	205C49	1	Blower
3	510P63	1	Bearing
4	*	1	Stator Assembly, Wound
5	212C248	1	Rig Assembly, Brush - Includes Brushes & Springs
6	212B1105	4	Spring, Brush
7	214A56	4	Brush
8	150A717	1	Switch Assembly, Overspeed COVER, END BELL OPENING - INCLUDES LATCH & BRACKET
9	232B1254	2	Plain
10	232B1253	2	Screened

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
11	234C84	1	Scroll, Air
12	312A17	1	Condenser - 0.5 Mfd.
13	211E131	1	Bell, End - Alternator to Exciter
14	234C83	1	Band, Generator - Front Portion - Narrow
15	BAND, GENERATOR - REAR PORTION - WIDE		
234D81		1	50KB Single Phase and 60KB Models
234D82		1	50KB 3 Phase Models
16	232A1186	1	Holder, Bearing - Anti-Rotation
17	232A1187	1	Spring, Bearing Holder - Anti-Rotation
18	232C1556	2	Pad, Generator Mounting
19	336A1082	1	Lead, Overspeed Switch

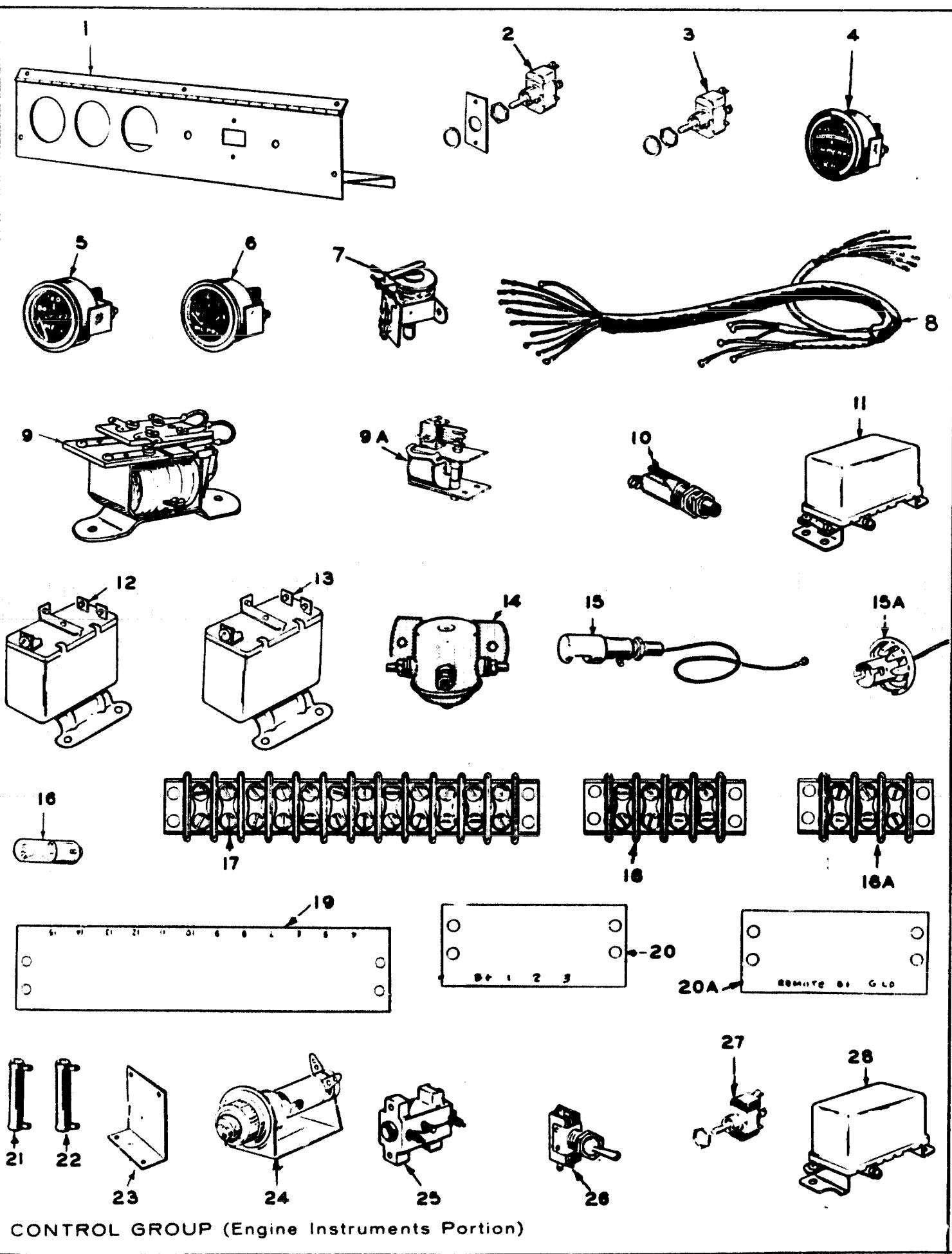
\* - Order by description, giving Model, Spec and Serial Number (ONAN Nameplate).



## **GENERATOR PORTION (Exciter Portion)**

<u>REF.</u>	<u>PART NO.</u>	<u>QTY.</u>	<u>PART DESCRIPTION</u>	<u>REF.</u>	<u>PART NO.</u>	<u>QTY.</u>	<u>PART DESCRIPTION</u>
<u>NO.</u>	<u>NO.</u>	<u>USED</u>		<u>NO.</u>	<u>NO.</u>	<u>USED</u>	
1	COVER, EXCITER	1		14	520A579	2	*Stud, Resistor and Rectifier Mounting (NOTE: I only included with #305B202 assy).
	234D59	1	Spec A Models Only				
	234D106	1	Begin Spec B				
2	520A575	3	Std, Exciter Cover Mounting	15	232A1473	2	*Spacer, Adjustable Resistor and Rectifier to Stud (3/8" O.D. x 3/16" I.D. x 7/32" Long)
2A	866-1	3	Nut, Acorn - Exciter Cover Mounting	16	304A14	2	*Washer, Centering - Adjustable Resistor Mounting
3	PANEL ONLY, EXCITER			17	305-208	4	*Rectifier, Regulator (Control)
	234D100	1	Spec A Models Only	18	315A57	2	Reactor, Gate
	234D105	1	Begin Spec B	19	234B62	2	Retainer, Gate Reactor
4	305B212	1	Rectifier Assembly, Power (Complete) Includes four #305-211 plus wire and hwde.	20	232A1361	2	Std, Gate Reactor Mounting
5	305-211	4	Rectifier Only, Power (Field) Included with #305B212 Assembly	21	304A21	1	Resistor, Fixed - Alternator Field (Damping) 3/4" x 4" (200-Ohm, 50-Watt)
6	150B733	1	Bracket Only, Overspeed Switch	22	304A15	2	Washer, Centering - Fixed Resistor Mounting
7	232A1365	1	Stud and Contact Point Assy., Voltage Control Reactor Mounting	23	332A604	1	Block, Terminal - 5 Place Strip, Block Marker - For 5 Place Block
8	WASHER, FIBRE INSULATING - VOLTAGE CONTROL REACTOR STUD MOUNTING						CONDENSER - 0.5 Mfd.
	508-18	2	1/4" x 3/4" x 1/16"	25	312A17	1	Left Hand - Spec A Models Only
	508-29	1	1/4" x 3/8" x 1/32"	26	312A27	1	Right Hand - Spec A Models Only
9	REACTOR, VOLTAGE CONTROL - Does Not Include Terminal Block			27	INSULATION, REACTOR MOUNTING		
	315A49	1	Spec A Models Only	27	232A1051	4	Gate Reactor to Mounting Bracket (1-1/4" x 1-5/8" x 1/8")
	315A74	1	Begin Spec B	28	895-70	8	(6) Gate Reactor to Retainer, (2) Voltage Control Reactor Mounting - SPECIFY SIZE REQUIRED
10	BLOCK, TERMINAL - VOLTAGE CONTROL REACTOR			29	232A1474	2	Spacer, Fixed Resistor to Stud (3/8" O.D. x 3/16" I.D. x 11/32" Long)
	332A622	1	Spec A Models Only	30	332A537	1	Block, Terminal - 4 Place Strip, Terminal Block Marker - 4 Place Block
	332A687	1	Begin Spec B	31	332A686	1	
11	305B202	1	Rectifier Assembly, Resistor and (Includes parts marked * plus wire and hardware).				
12	234B60	2	*Bracket, Gate Reactor Mounting (NOTE: I only included with #305B202 assembly).				
13	304A5	1	*Resistor, Control - Adjustable (150-Ohm, 25-Watt; 9/16" x 2")				

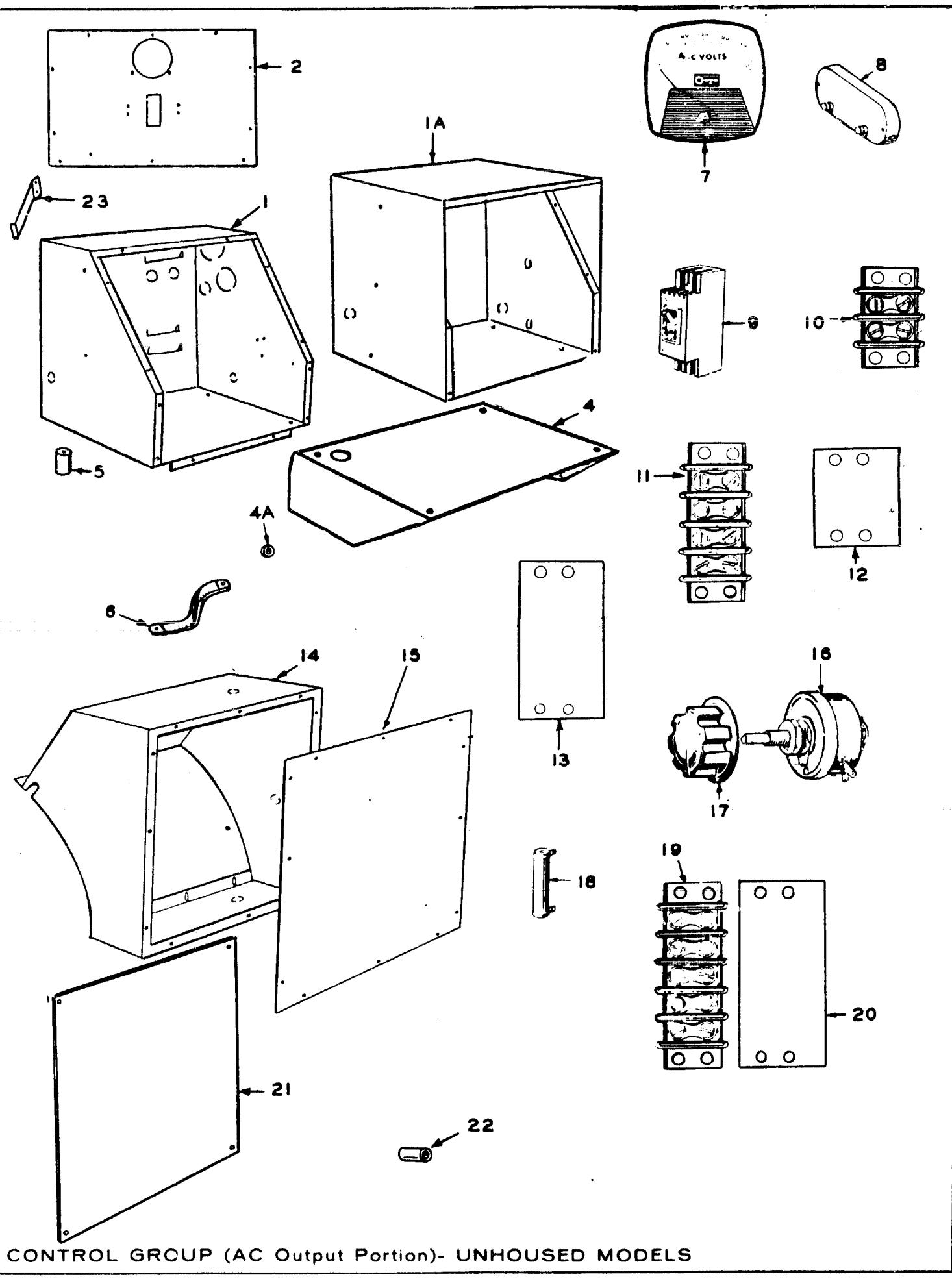
\* - Included in Resistor and Rectifier Assembly #305B202.



CONTROL GROUP (Engine Instruments Portion)

<u>REF. NO.</u>	<u>PART NO.</u>	<u>QTY. USED</u>	<u>PART DESCRIPTION</u>
1	PANEL ONLY, LOWER CONTROL		
	301C1608	1	Prior to Spec F
	301C1916	1	Spec F and G
	301C2124	1	Begin Spec H
2	308A166	1	Switch and Adapter Assembly, Start-Stop - Prior to Spec F
2A	308P154	1	Switch, Start-Stop - Spec F through G
4	302A61	1	Ammeter, Charge (30-0-30)
5	193B106	1	Gauge, Water Temperature
6	193B107	1	Gauge, Oil Pressure
7	307A388	1	Relay, Time Delay
8	HARNESS ASSEMBLY, WIRE - ENGINE TO CONTROL		
	338C211	1	Housed Models - Prior to Spec K
	338C416	1	Housed Models - Begin Spec K
	338C209	1	Unhoused Models - Prior to Spec K
	338C415	1	Unhoused Models - Begin Spec K
9	RELAY, EMERGENCY STOP		
	307B299	1	Prior to Spec F
	307B614	1	Spec F and G
9A	307A655	1	Relay, Latching - Emergency Stop - Begin Spec H
10	308-91	1	Button, Emergency Stop Re-Set - Prior to Spec H
11	RELAY		
	307B4	1	Stop - Prior to Spec H
	307B4	1	Anti-Dieseling Solenoid Start - Prior to Spec H
12	RELAY, START IGNITION		
	307B81	1	Prior to Spec H
	307B597	1	Begin Spec H
13	307B52	1	Relay, Start-Disconnect
14	RELAY, STARTER PILOT		
	307B40	1	Prior to Spec H
	307B514	1	Begin Spec H
15	322-49	1	Receptacle, Panel Light - Housed Models Only - Prior to Spec H

<u>REF. NO.</u>	<u>PART NO.</u>	<u>QTY. USED</u>	<u>PART DESCRIPTION</u>
15A	322P72	2	Receptacle, Panel Lights - Begin Spec H
16	BULB, PANEL LIGHT		
	322-26	1	Prior to Spec H - Housed Models Only
	322-4	3	Begin Spec H (2) Panel Lights (1) Pilot Light
17	332A607	1	Block, Terminal - Engine Connections - 12 Place
	BLOCK, TERMINAL - REMOTE CONNECTION		
18	332A537	1	4 Place - Prior to Spec H
18A	332A611	1	3 Place - Begin Spec H
19	332A608	1	Strip, Block Marker (Marked 4 through 15)
	STRIP, BLOCK MARKER - REMOTE CONNECTION		
20	332A566	1	Prior to Spec H - (Marked B+, 1, 2, 3)
20A	332A762	1	Begin Spec H - (Marked Remote, B+, Ground)
21	304-45	1	Resistor, Fixed (4-Ohm, 50-Watt) - 3/4 x 4"
22	RESISTOR, FIXED - 5/16 x 1-3/4"		
	304-32	1	15-Ohm, 10-Watt - Prior to Spec H
	304A192	1	3-Ohm, 10-Watt - Begin Spec H
23	301A1685	1	Bracket, Time Delay Relay Mounting
24	322P69	1	Receptacle Assembly, Pilot Light - Begin Spec H
25	320A104	1	Breaker, Circuit - Cranking Limiter - Begin Spec H
26	308-2	1	Switch, Panel Lights - Begin Spec H
27	308P138	1	Switch, Run-Stop-Remote - Begin Spec H
28	307B597	1	Relay, Ignition - Begin Spec H
	306A211	1	Bracket, Starter Pilot Relay - Begin Spec K

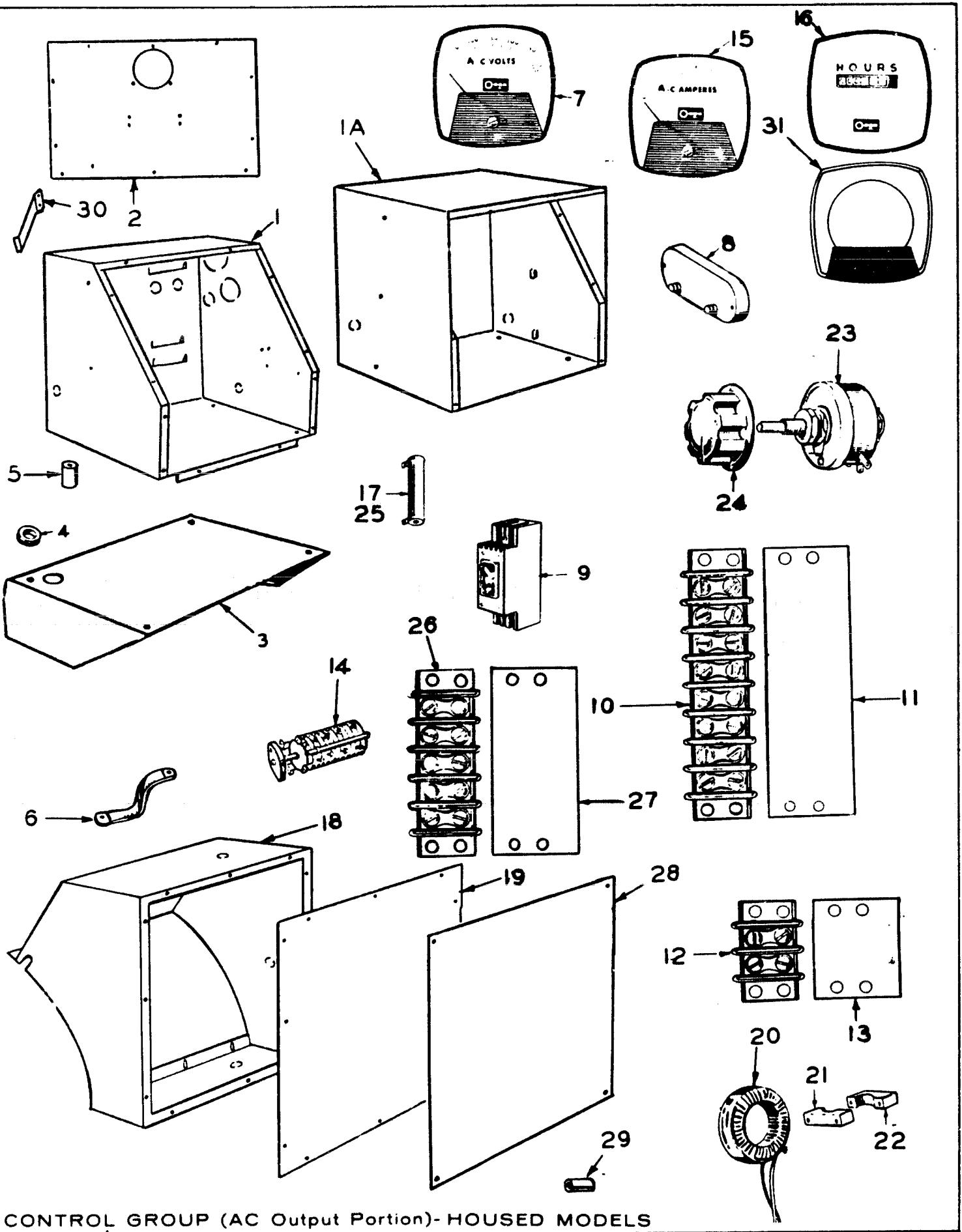


CONTROL GROUP (AC Output Portion)- UNHOUSED MODELS

**NOTE:** For Unhoused Models with Optional Meter Panel, use Control Group as listed for Housed Models.

<u>REF. NO.</u>	<u>PART NO.</u>	<u>QTY. USED</u>	<u>PART DESCRIPTION</u>
	BOX ONLY, CONTROL		
1	301D1537	1	Prior to Spec H
1A	301D2115	1	Begin Spec H
2	PANEL ONLY, CONTROL		
	301C1666	1	All Models EXCEPT 480 Volt - Spec A Only
	301C1657	1	480 Volt Model - Spec A Only
	301C1809	1	All Models Begin Spec B
4	BRACKET, CONTROL BOX MOUNTING		
	301C2539	1	3-Phase Models (Replaces 2 Piece Bracket)
	301C1830	1	1-Phase Models (Models with Unity Power Factor Use 301C2539)
4A	508P63	1	Grommet, Mounting Bracket
5	402-78	4	Rubber, Mounting - Control Box to Mounting Bracket
6	337A44	1	Strap, Ground
7	VOLTMETER, AC		
	302P421	1	120/240 Volt - 1 Phase Models, and 120/208 Volt and 120/240 Volt - 3 Phase Models - (0-300)
	302P422	1	480 Volt, and 277/480 Volt - 3 Phase Models - (0-600)
	302P423	1	600 Volt - 3 Phase - (0-750)
8	302-157	1	Multiplier, Meter (Resistor) - 480 Volt Models Only - Prior to Spec H - (Used with 0-500 Voltmeter)
9	320B170	1	Breaker, Circuit
10	BLOCK, TERMINAL		
	332A333	1	All Models EXCEPT 480 Volt - Spec A Only (2 Place Block)
11	332A391	1	480 Volt Models - Spec A Only - (4 Place Block)
	STRIP, TERMINAL BLOCK MARKER		
12	332A600	1	All Models EXCEPT 480 Volt - Spec A Only - (2 Place)
13	332A427	1	480 Volt Models - Spec A Only - (4 Place)

<u>REF. NO.</u>	<u>PART NO.</u>	<u>QTY. USED</u>	<u>PART DESCRIPTION</u>
14	BOX, OUTPUT TERMINAL (Mts. on Side of Generator)		
	301E1675	1	Single Phase Models - (NOTE: Models with Unity Power Factor use 301B1209)
15	301B1209	1	All 3 Phase Models
	COVER, OUTPUT TERMINAL BOX		
	301B1676	1	Single Phase Models - (NOTE: Models with Unity Power Factor use 301B1190)
16	301B1190	1	All 3 Phase Models
	RHEOSTAT, VOLTAGE REGULATOR - 75-Ohm Model		
	H - Begin Spec B		
	303-111	1	Single Phase Models - (NOTE: Models with Unity Power Factor use 303-97)
	303-97	1	All 3 Phase Models
17	303-32	1	Knob, Rheostat - Begin Spec B
18	RESISTOR, RHEOSTAT - BEGIN SPEC B		
	304A484	1	Single Phase Models - (NOTE: Models with Unity Power Factor use 304A479) - 825-Ohm - 75-Watt
	304A479	1	All 3 Phase Models - 425-Ohm - 50-Watt
19	332A604	1	Block, Terminal (5 Place) - Begin Spec B
20	STRIP, TERMINAL BLOCK MARKER		
	332A689	1	120/208 Volt, 120/240 Volt, 600 Volt - 3 Phase Models
	332A690	1	Single Phase Models, and 480 Volt, and 277/480 Volt - 3 Phase Models - (NOTE: Single Phase Models with Unity Power Factor use 332A689)
21	BACK PLATE, CONTROL BOX		
	301B1714	1	Spec B through G
	301B2222	1	Begin Spec H
22	301A458	4	Spacer, Control Box Back Plate - Begin Spec B
23	301A1914	1	Bracket, Panel Stop



CONTROL GROUP (AC Output Portion)- HOUSED MODELS

**NOTE:** Use this group also for Unhoused Models with Optional Meter Panel. (Standard on Housed Models).

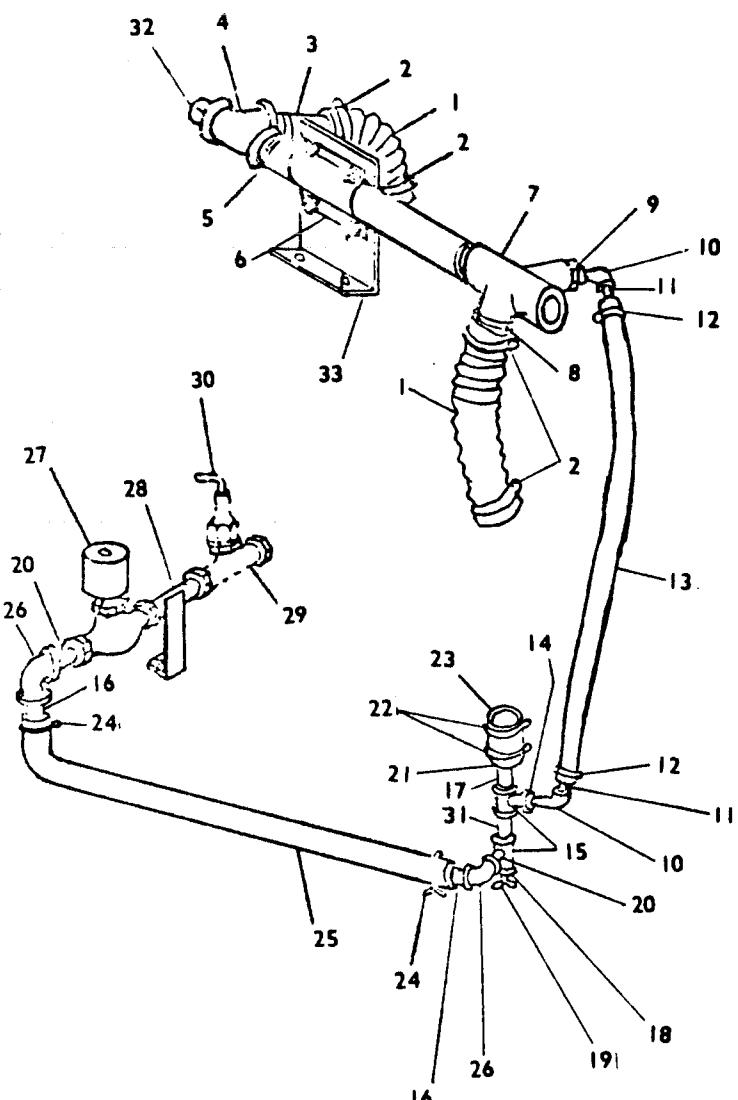
REF.	PART NO.	QTY. USED	PART DESCRIPTION	REF.	PART NO.	QTY. USED	PART DESCRIPTION
			BOX ONLY, CONTROL				277/480-Volt, and 480-Volt - 3 Phase Models
1	301D1537	1	Prior to Spec H	17	RESISTOR, RUNNING TIME METER		
1A	301D2115	1	Begin Spec H	304A444		1	Used on some early 120/240-Volt Models - Prior to Spec H - (Used with 302-387 Meter)
2	FANEL ONLY, CONTROL		Spec A Models Only	304A445		1	Used on some early 480-Volt Models - Prior to Spec H - (Used with 302-387 Meter)
	301C1641	1	50,000-Watt - Single Phase	304A125		1	480-Volt, and 277/480-Volt - 3 Phase Models - Prior to Spec H - (Used with 302-212 Meter)
	301C1642	1	All 50,000-Watt - 3 Phase	304A134		1	600-Volt - 3 Phase Models - Prior to Spec H - (Used with 302-212 Meter)
	301C1658	1	60,000-Watt - 3 Phase	304A536		1	600-Volt - 3 Phase Models - Begin Spec H - (Used with 302P465 Meter)
			Spec B through G	18	301D1209	1	Box, Output-Terminal (Mts. on Side of Generator)
	301C1810	1	50,000-Watt - Single Phase	19	301B1190	1	Cover, Output Terminal Box
	301C1814	1	120/208-Volt, and 120/240-Volt - 3 Phase	20	TRANSFORMER, CURRENT (Mts. Inside Terminal Box) Check Transformer Nameplate - Select According to Rating		
	301C1824	1	480-Volt, 277/480-Volt, and 600-Volt - 3 Phase	302B76	3	Transformer Nameplate Reads "Ratio 75/5" - (Use with 0-75 AC Ammeter)	
			Begin Spec H	302B78	3	Transformer Nameplate Reads "Ratio 100-5" - (Use with 0-100 AC Ammeter)	
	301C1810	1	50,000-Watt - Single Phase	302B125	3	Transformer Nameplate Reads "Ratio 140/5" - (Use with 0-140 AC Ammeter)	
	301C1814	1	120/208-Volt, 120/240-Volt, 277/480-Volt, 480-Volt, and 600-Volt - 3 Phase	302B106	3	Transformer Nameplate Reads "Ratio 200/5" - (Use with 0-200 AC Ammeter)	
3	301C2539	1	*Bracket, Control Box Mounting (Repl. 2 Piece Bracket)	302B209	3	Transformer Nameplate Reads "Ratio 250/5" - (Use with 0-250 AC Ammeter)	
4	508P63	1	*Grommet, Mtg. Bracket	302B107	3	Transformer Nameplate Reads "Ratio 300/5" - (Use with 0-300 AC Ammeter) - NOTE: Quantity is 2 for Single Phase Models.	
5	402-78	4	*Rubber, Mounting - Control Box to Mtg. Bracket	21	CLAMP, CURRENT TRANSFORMER MOUNTING		
6	337A44	1	Strap, Ground	302A235	3	Inside Half (NOTE: Quantity is 2 for Single Phase Models)	
7	VOLTMETER, AC			22	302A236	3	Outside Half (NOTE: Quantity is 2 for Single Phase Models)
	302P421	1	120/240-Volt - Single Phase, and 120/208-Volt, and 120/240-Volt - 3 Phase Models - (0-300)	23	303-97	1	Rheostat, Voltage Regulator - 75-Ohm, Model H - Begin Spec B
	302P422	1	277/480-Volt, and 480-Volt - 3 Phase Models - (0-600)	24	303-32	1	Knob, Rheostat - Begin Spec B
	302P423	1	600-Volt - 3 Phase Models - (0-750)	25	304A479	1	Resistor, Rheostat - Begin Spec B
8	302-157	1	Multiplier, Meter (Resistor) 480-Volt Models - Prior to Spec H - (Used only with 0-500 Scale Voltmeter)	26	332A604	1	Block, Terminal - 5 Place - Begin Spec B
9	320B170	1	Breaker, Circuit	27	STRIP, BLOCK MARKER - 5 Place		
10	332A503	1	Block, Terminal (8 Place)	332A689	1	120/240-Volt - Single Phase, and 120/208-Volt, and 120/240-Volt - 3 Phase Models - Begin Spec B	
11	332A601	1	Strip, Terminal Block Marker (8 Place)	332A690	1	480-Volt, 277/480-Volt, and 600-Volt - 3 Phase Models - Begin Spec B	
12	332A333	1	Block, Terminal - 2 Place - 480-Volt Plants - Spec A Only	28	*BACK PLATE, CONTROL BOX		
13	332A600	1	Strip, Block Marker - 2 Place - 480-Volt Plants - Spec A Only	301C1714	1	Prior to Spec H	
14	308-22	1	Switch, Voltage & Current Selector - 3 Phase Models Only	301B2222	1	Begin Spec H	
15	AMMETER, AC (Check Ammeter Scale - Select According to Rating)						
	302P406	1	Ammeter Scale Reads 0-75				
	302P408	1	Ammeter Scale Reads 0-100				
	302P409	1	Ammeter Scale Reads 0-140				
	302P411	1	Ammeter Scale Reads 0-200				
	302P412	1	Ammeter Scale Reads 0-250				
	302P413	1	Ammeter Scale Reads 0-300				
16	METER, RUNNING TIME - 60 CYCLE PLANTS						
	302-212	1	Prior to Spec H - (NOTE: When used to replace 302-387 on plants requiring a resistor also order #304A99 Resistor for 120/240-Volt or #304A125 for 480-Volt or #304A134 for 600-Volt Models)				
			Begin Spec H				
	302P465	1	120/240-Volt - Single Phase, and 120/208-Volt, 120/240-Volt, and 600-Volt - 3 Phase Models				

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
29	301C458	4	*Spacer, Control Box Back Plate				
30	301A1914	1	Bracket, Panel Stop				
31	302B448	1	Plate, Meter Face				

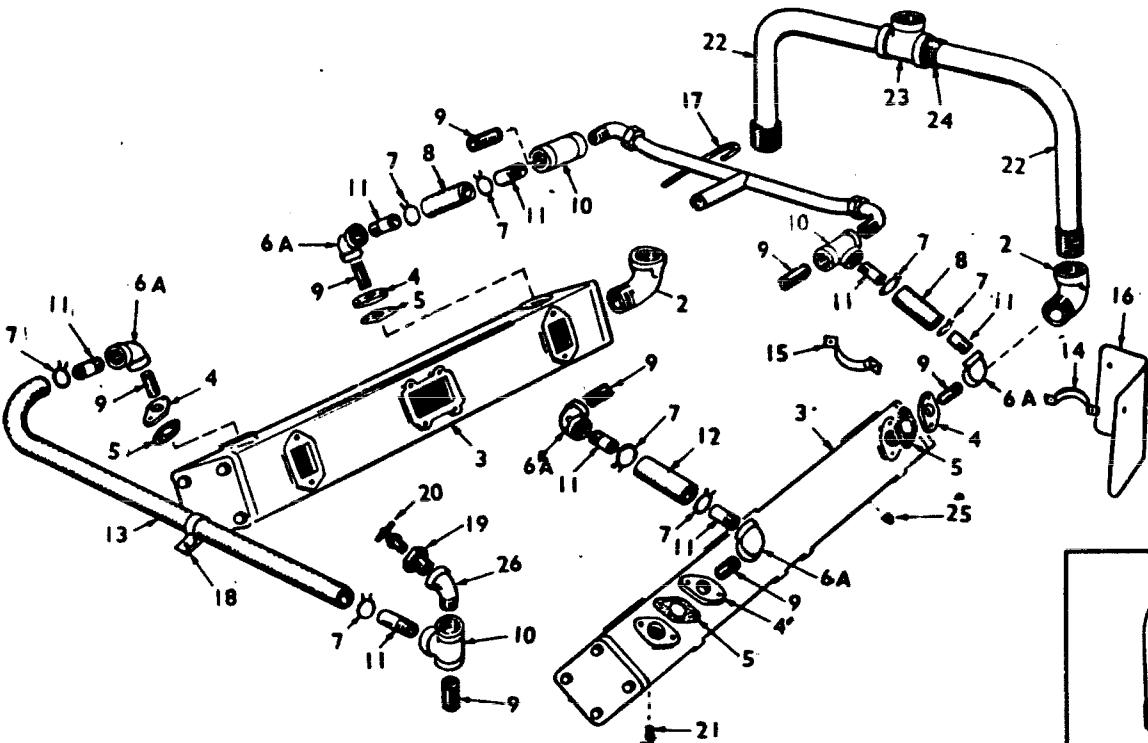
\* - These parts used only on Unhoused Models WITH OPTIONAL Meter Panel.

### CITY WATER COOLING SYSTEM GROUP- OPTIONAL

NOTE: See separate groups for plants with water cooled manifold, and/or heat exchanger.



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	503P364	2	Hose, Upper
2	503P365	4	Clamp, Hose
3	505-474	1	Nipple, Half (1-1/2 x 5") - Unhoused Plants
3	505-272	1	Nipple, Half (1-1/2 x 4") - Housed Plants
4	505-317	1	Tee (1-1/2")
5	505-424	1	Nipple, Pipe (1-1/2 x 16-1/2")
6	130B488	1	Support, Pipe
7	505-398	1	Tee, Side Outlet (1-1/2")
8	505-272	1	Nipple, Half (1-1/2 x 4") - Unhoused Plants
8	505-385	1	Nipple, Half (1-1/2 x 2") - Housed Plants
9	505-426	1	Bushing, Reducer (1-1/2 x 1/4")
10	505-11	1	Elbow, Street (1/4") - 2 used on Housed plants
11	505-10	2	Nipple, Half (1/4 x 1")
12	503-32	2	Clamp, Hose
13		1	Hose (Order 20" of Bulk Hose #503P110)
14	505-20	1	Bushing, Reducer (3/4 x 1/4")
15	505-166	2	Tee, Pipe (3/4")
16	505-324	1	Nipple, Half (3/4 x 2")
17	505-84	1	Nipple, Pipe (3/4 x 2-1/2") - 2 used on Housed plants
18	505-131	1	Bushing, Reducer (3/4 x 3/8")
19	504-28	1	Valve, Drain
20	505-102	2	Nipple, Close (3/4")
21	130A452	1	Inlet, Water
22	503P354	2	Clamp, Hose
23		1	Hose (Order 3" of Bulk Hose #503-357)
24	503-189	2	Clamp, Hose
25		1	Hose (Order 34" of Bulk Hose #503-249)
26	505-132	2	Elbow, Pipe (3/4" x 90°)
27	307P835	1	Solenoid Valve
28	110A810	1	Nipple & Bracket
29	504-46	1	Valve, Lockshield
30	504-20	1	Key, Lockshield Valve
31	505-165	1	Nipple, Pipe (3/4 x 5-1/2")
32	505-402	1	Plug, Pipe (1-1/2")
33	130A528	1	Support, Pipe
	130C454	1	Guard, Belt, Unhoused plants only
	130B455	1	Bracket, Belt Guard - Unhoused plants only
	403C384	1	Extension, Radiator Hood - Unhoused plants only

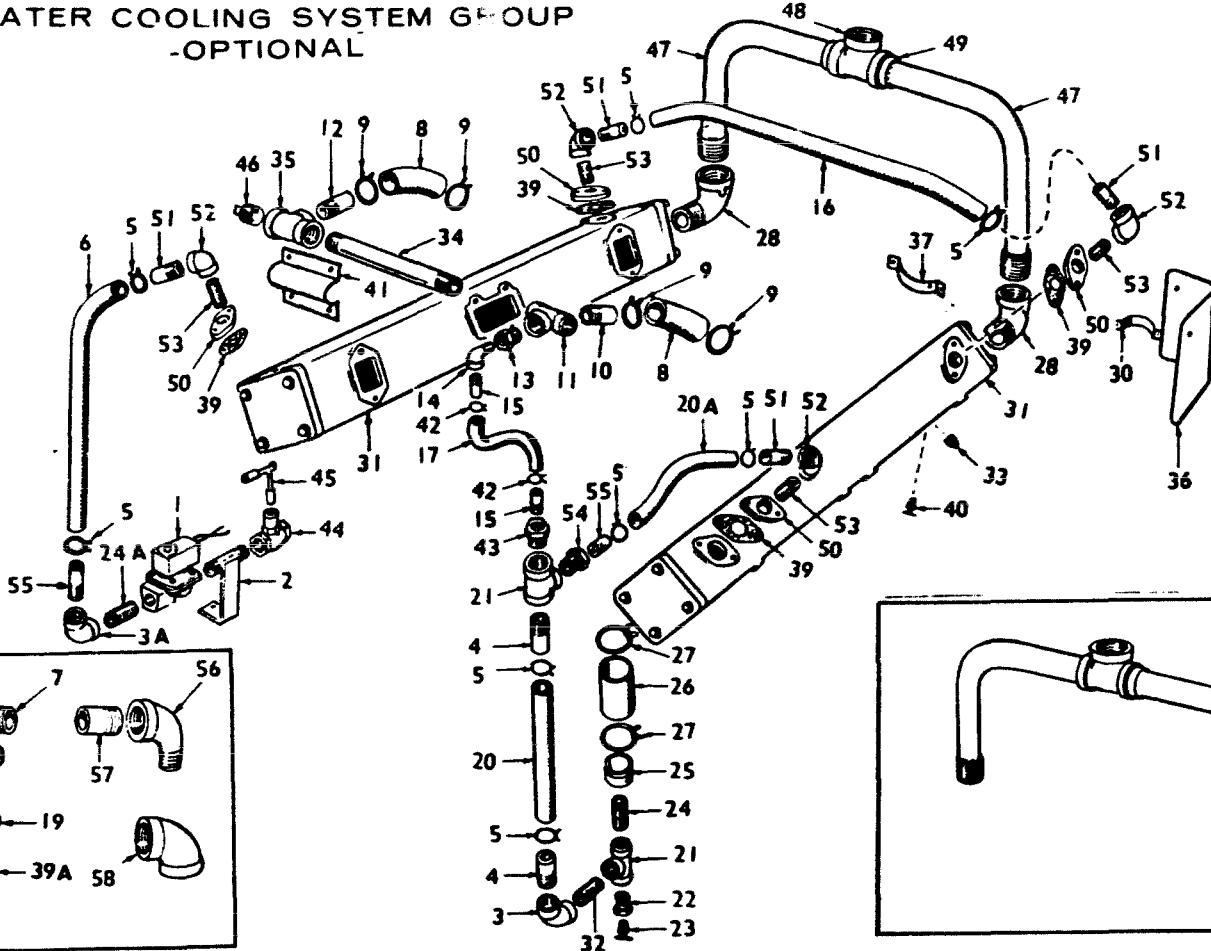


CITY WATER COOLING SYSTEM GROUP- OPTIONAL

**NOTE:** See separate groups for plants without heat exchanger and/or city water cooled manifolds.

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	155C656	1	Header Assy., Exhaust - Prior to Serial #39C090774	12	HOSE	1	Order 10" of Bulk Hose #503P191 - Prior to Serial #39C090774
2	505-216	2	Elbow, Street (2-1/2")			1	Order 13-1/2" of Bulk Hose #503P191 - Begin Serial #39C090774
3	MANIFOLD, WATER COOLED 154P583 154P1245	2	Prior to Serial #39C090774 Begin Serial #39C090774	13	HOSE	1	Order 25-1/2" of Bulk Hose #503P191 - Prior to Serial #39C090774
4	154A611	4	Flange			1	Order 30" of Bulk Hose #503P191 - Begin Serial #39C090774
5	145A178	4	Gasket, Flange	14	155A661	2	Band, Exhaust Shield Mtg.
6	505-50	6	Elbow, Street (1/2" x 90°) - Manifold Water Inlet - Prior to Serial #39C090774	15	155A660	2	Bracket, Exhaust Shield Mtg.
6A	505-40	5	Elbow, Pipe (1/2" x 90°) - Manifold Water Inlet - Begin Serial #39C090774	16	155C659	2	Shield, Exhaust Header
7	503-189	8	Clamp, Hose	17	130A745	1	Line, Water
8	HOSE	2	Order 5-1/2" of Bulk Hose #503P191 - Prior to Serial #39C090774	18	148-274	1	Clamp, Hose Support
		2	Order 8" of Bulk Hose #503P191 - Begin Serial #39C090774	19	505-19	1	Bushing, Reducer (1/2 x 3-1/8")
9	505-100	8	Nipple, Pipe (1/2 x 1-1/8") - NOTE: Prior to Serial #39C090774 Quantity of 3 each.	20	504-28	1	Valve, Drain
10	505-108	3	Tee, Pipe (1/2")	21	504-5	2	Valve, Drain
11	505-185	8	Nipple, Half (1/2 x 1-1/2")	22	TUBE, EXHAUST - Begin Serial #39C090774		
				155B1048	1	Left Side	
				155B1047	1	Right Side	
				23	505-373	1	Tee, Reducing (2-1/2 x 2-1/2 x 3) - Begin Spec #39C090774
				24	155A615	1	Nipple, Half - Begin Serial #39C090774
				25	505-57	2	Plug, Pipe (1/8)
				26	505-248	1	Elbow, Street (1/2 x 45°)
					154P592	2	Gasket Set, Manifold

CITY WATER COOLING SYSTEM GROUP  
-OPTIONAL

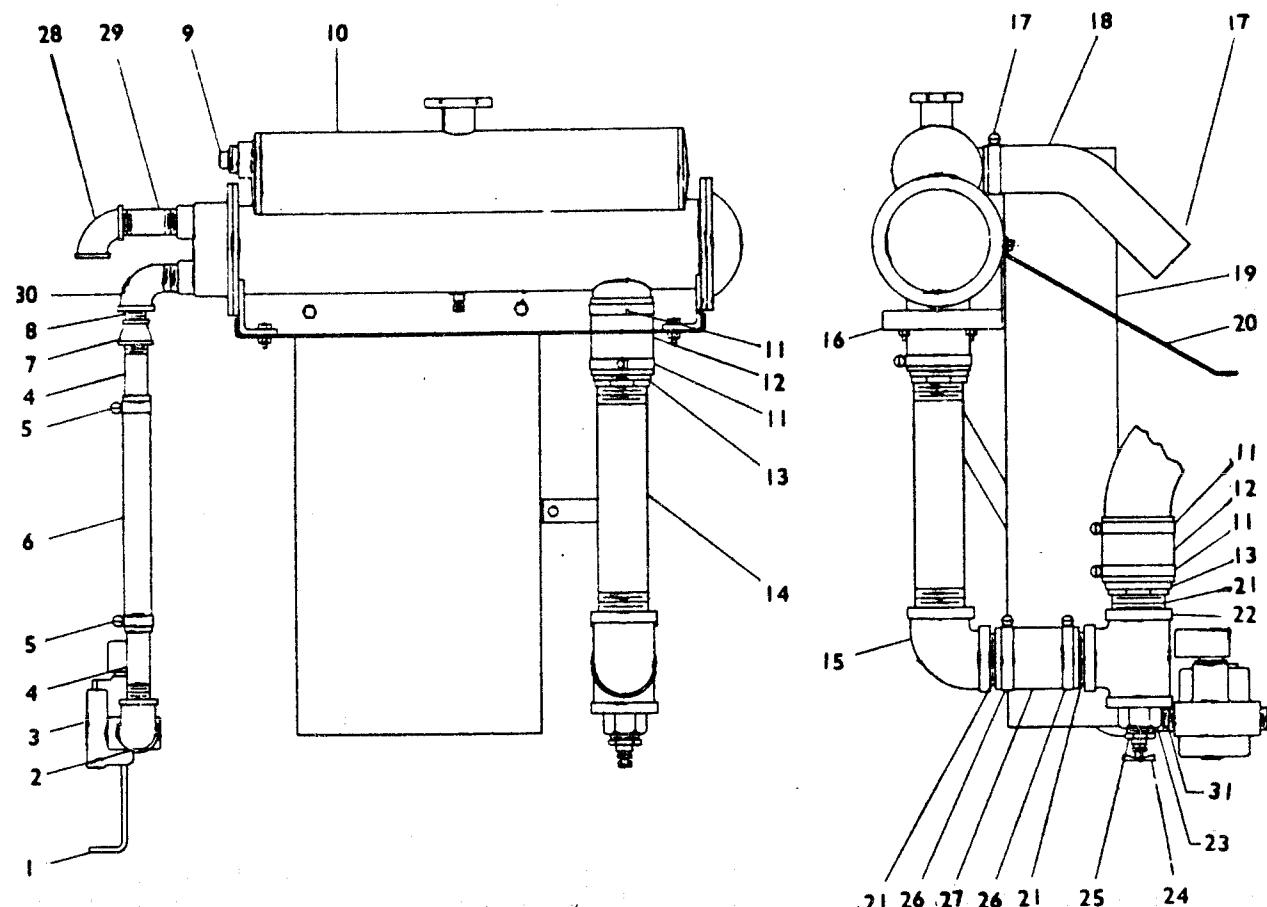


NOTE: See separate groups for plants with heat exchanger and city water cooled without water cooled manifolds.

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	VALVE, SOLENOID 307P835	1	Prior to Serial #29C090774
	307P833	1	Begin Serial #39C090774
2	NIPPLE & BRACKET 110A810	1	Prior to Serial #39C090774
	110A526	1	Begin Serial #39C090774
3	505-132	1	Elbow, Pipe (3/4" x 90°)
3A	ELBOW, PIPE 505-132	1	3/4 x 90° - Prior to Serial #39C090774
	505-40	1	1/2 x 90° - Begin Serial #39C090774
4	505-324	2	Nipple, Half (3/4" x 2")
5	503-189	8	Clamp, Hose
6	HOSE	1	Order 18" of Bulk Hose #503-249 - Prior to Serial #30C090774
		1	Order 23" of Bulk Hose #503-386 - Begin Serial #39C090774
7	CONNECTOR, WATER INLET - MANIFOLD - Prior To Serial #39C090774	1	Rear
	154B595	2	Right Front
	154B602	1	Left Front
8	503P364	2	Hose, Upper
9	503P365	4	Clamp, Hose
10	505-272	1	Nipple, Half (1-1/2 x 4")
11	505-398	1	Tee, Side Outlet (1-1/2")

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
12	505-474	1	Nipple, Half (1-1/2 x 5")
13	505-426	1	Bushing, Reducer (1-1/2 x 1/4")
14	505-11	1	Elbow, Street (1/4")
15	505-10	2	Nipple, Half (1/4")
16	HOSE	1	Order 34" of Bulk Hose #503-249 - Prior to Serial #39C090774
		1	Order 38" of Bulk Hose #503-386 - Begin Serial #39C090774
17		1	Hose (Order 9" of Bulk Hose #503P110)
19	154A596	1	Cover, Flange - Prior to Serial #39C090774
20		1	Hose (Order 7" of Bulk Hose #503-249)
20A	HOSE	1	Order 7" of Bulk Hose #503-249 - Prior to Serial #39C090774
		1	Order 11" of Bulk Hose #503-386 - Begin Serial #39C090774
21	505-166	2	Tee, Pipe (3/4")
22	505-131	1	Bushing, Reducer (3/4 x 3/8")
23	504-28	1	Valve, Drain
24	505-102	1	Nipple, Close (3/4")

<u>REF. NO.</u>	<u>PART NO.</u>	<u>QTY. USED</u>	<u>PART DESCRIPTION</u>	<u>REF. NO.</u>	<u>PART NO.</u>	<u>QTY. USED</u>	<u>PART DESCRIPTION</u>
24A	NIPPLE, PIPE			50	154A611	4	Flange, Water Inlet - Begin Serial #39C090774
	505-102	1	3/4" x Close - Prior to Serial #39C090774	51	505-185	4	Nipple, Half (1/2 x 1-1/2") - Begin Serial #39C090774
	505-100	1	1/2" x Close - Begin Serial #39C090774	52	504-40	4	Elbow, Pipe (1/2 x 90°) - Begin Serial #39C090774
25	130A452	1	Inlet, Water	53	505-100	4	Nipple, Pipe (1/2 x Close) - Begin Serial #39C090774
26		1	Hose (Order 3" of Bulk Hose #503-357)	54	505-21	1	Bushing, Reducer (3/4 x 1/2") - Begin Serial #39C090774
27	503P354	2	Clamp, Hose	55	NIPPLE, HALF		
28	505-216	2	Elbow, Street (2-1/2")	505-324	2	3/4 x 2" - Prior to Serial #39C090774	
29	155C656	1	Header Assy., Exhaust - Prior to Serial #39C090774	505-185	2	1/2 x 1-1/2" - Begin Serial #39C090774	
30	155A661	2	Band, Exh. Shield Mtg.	56	505-287	1	Elbow, Street (3/4" x 45°) - L.H. Front Manifold Water Inlet - Housed Plants Only - Prior to Serial #39C090774
31	MANIFOLD, WATER COOLED			57	505-324	1	Nipple, Half (3/4 x 2") - L.H. Front Manifold Water Inlet - Housed Plants Only - Prior to Serial #39C090774
	154P583	2	Prior to Serial #39C090774	58	505-132	1	Elbow, Pipe (3/4 x 90°) - L.H. Front Manifold Water Inlet - Housed Plants Only - Prior to Serial #39C090774
	154P1245	2	Begin Serial #39C090774	402A137	2	Spacer, Coil Stud - Prior to Serial #39C090774	
32	505-84	1	Nipple, Pipe (3/4 x 2-1/2")	520A458	2	Stud, Coil Mounting - Prior to Serial #39C090774	
33	505-57	2	Plug, Pipe (1/8")	520A44	16	Stud, Manifold Mounting	
34	505-424	1	Nipple, Pipe (1-1/2" x 16-1/2")	154P592	2	Gasket Set, Manifold	
35	505-317	1	Tee (1-1/2")	130C454	1	Guard, Belt	
36	155C659	2	Shield, Exh. Header	130B455	1	Bracket, Belt Guard	
37	155B660	2	Bracket, Exh. Shield Mtg.	403C384	1	Extension, Radiator Hood - Unhoused Plants Only - Prior to Serial #39C090774	
39	145A178	4	Gasket, Flange	305D1186	1	Top Panel, Hsg. - Housed Plants Only	
39A	145A178	1	Gasket, Flange - Prior to Serial #39C090774	405D1185	1	Door, Hsg. - Housed Plants Only	
40	504-5	2	Valve, Drain				
41	130B488	1	Support, Pipe				
42	503-32	2	Clamp, Hose				
43	505-20	1	Bushing, Reducer (3/4 x 1/4")				
44	VALVE, LOCKSHIELD						
	504-46	1	Prior to Serial #39C090774				
	504-19	1	Begin Serial #39C090774				
45	504-20	1	Key, Lockshield Valve				
46	505-402	1	Plug, Pipe (1-1/2")				
47	TUBE, EXHAUST - Begin Serial #39C090774						
	155B1048	1	Left Side				
	155B1047	1	Right Side				
48	505-373	1	Tee, Reducer (2-1/2 x 2-1/2 x 3) - Begin Serial #39C090774				
49	155A615	1	Nipple, Half - Begin Serial #39C090774				

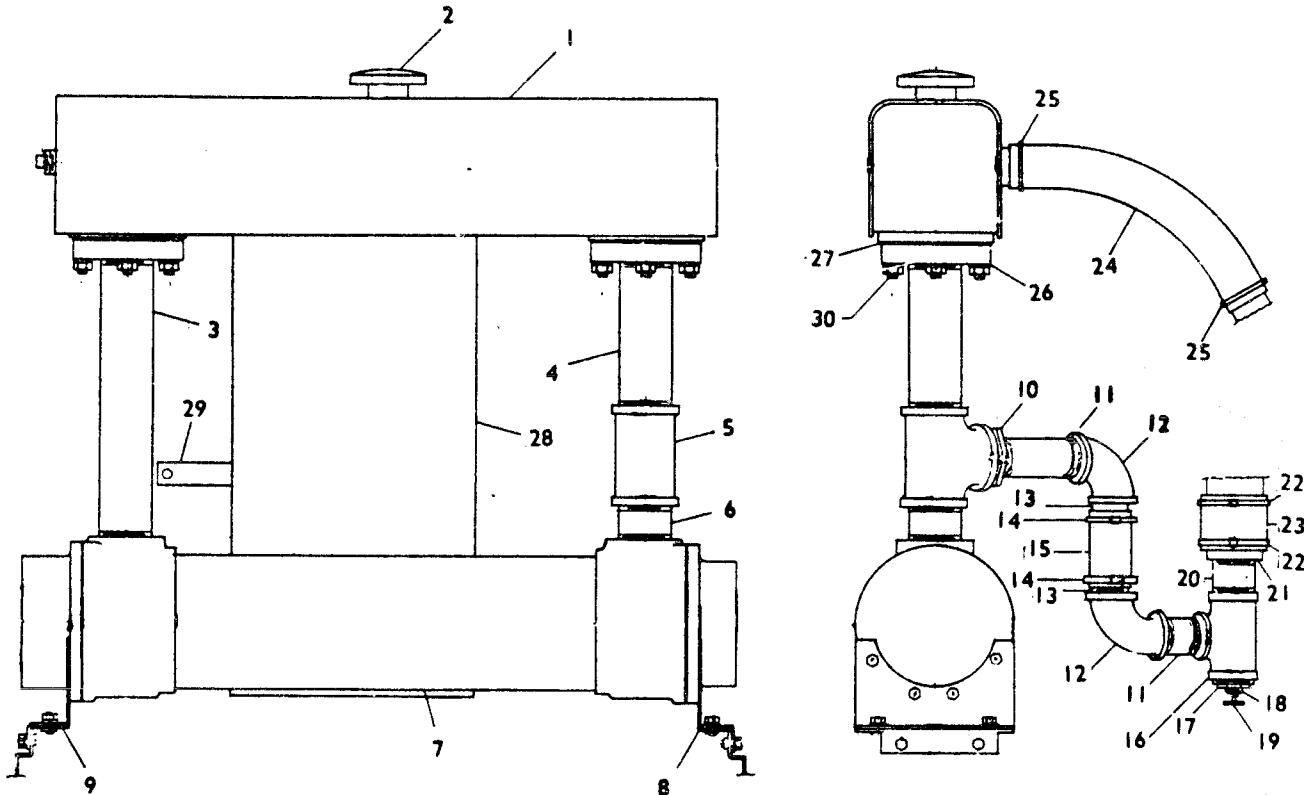


### HEAT EXCHANGER GROUP -BEGIN SPEC.L- OPTIONAL

NOTE: See separate groups for city water cooling systems.

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION	REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
1	130A763	1	Bracket & Nipple	18	503B332	2	Hose, Upper
2	505-3	1	Elbow (1-1/4")	19	130C454	1	Guard, Belt
3	307-849	1	Valve, Solenoid	20	130B751	1	Brace, Belt Guard
4	505-437	2	Nipple, Half (1-1/4 x 4")	21	505-385	3	Nipple, Half (1-1/2 x 2")
5	503-4	2	Clamp, Hose	22	505-317	1	Tee, Pipe (1-1/2")
6		1	Hose (Order 12" piece of Bulk Hose #503-359)	23	505-399	1	Bushing, Reducer (1-1/2" x 1/2")
7	505-138	1	Coupling, Reducer (1-1/4 x 1")	24	504-28	1	Valve, Drain
8	505-4	1	Nipple, Close (1 x 1-1/2")	25	505-19	1	Bushing, Reducer (1/2 x 3/8")
9	505-140	1	Plug, Pipe (1")	26	503-365	2	Clamp, Hose
10	130P753	1	Exchanger, Heat	27		1	Hose (Order 4" of Bulk Hose #503-411)
11	503P354	4	Clamp, Hose	28	505-41	1	Elbow, Pipe (1")
12		2	Hose (Order 4" piece of Bulk Hose #503-357)	29	505-86	1	Nipple, Pipe (1 x 2-1/2")
13	130A478	2	Inlet, Water	30	505-3	1	Elbow, Street (1-1/4")
14	505-95	1	Nipple, Pipe (1-1/2 x 12")	31	505-219	1	Nipple, Pipe (1-1/4 x 4-1/2")
15	505-43	1	Elbow, Pipe (1-1/2")	403C384		1	Cover, Chassis Front
16	130C752	1	Bracket, Heat Exchanger	504-51		1	Valve, Lockshield
17	503-311	2	Clamp, Hose	504-52		1	Key, Lockshield Valve

**HEAT EXCHANGER GROUP- PRIOR TO SPEC L- OPTIONAL**



**NOTE:** See separate groups for city water cooling systems.

<b>REF. NO.</b>	<b>PART NO.</b>	<b>QTY. USED</b>	<b>PART DESCRIPTION</b>	<b>REF. NO.</b>	<b>PART NO.</b>	<b>QTY. USED</b>	<b>PART DESCRIPTION</b>
1	130C475	1	Tank, Expansion	16	505-317	1	Tee, Pipe (1-1/2")
2	139P431	1	Cap, Expansion Tank Fill	17	505-399	1	Bushing, Reducer (1-1/2 x 1/2")
3	505-142	1	Nipple, Pipe (2 x 14")	18	505-19	1	Bushing, Reducer (1/2 x 3/8")
4	505-421	1	Nipple, Pipe (2 x 8")	19	504-6	1	Valve, Shut-off - Drain
5	505-374	1	Tee, Pipe (2")	20	505-220	1	Nipple, Pipe (1-1/2 x 1-3/4")
6	505-168	1	Nipple, Pipe (2 x 2-1/2")	21	130A478	1	Inlet, Water
7	130P416	1	Exchanger, Heat	22	503P354	2	Clamp, Hose
8	BRACKET, MTG.-HEAT EXCHANGER, R.H.			23		1	Hose (Order 3" of Bulk Hose #503-357)
	130B476	1	Unhoused Plants	24	503-332	2	Hose, Expansion Tank
	130B530	1	Housed Plants	25	503-287	4	Clamp, Hose
9	BRACKET, MTG.-HEAT EXCHANGER, L.H.			26	130P493	1	Flange, Union
	130B477	1	Unhoused Plants	27	130A486	2	Gasket, Flange to Exp. Tank
	130B531	1	Housed Plants	28	130C454	1	Guard, Belt - Unhoused Plants Only
10	505-187	1	Bushing, Reducer (2 x 1-1/2")	29	130B455	1	Bracket, Belt Guard - Unhoused Plants Only
11	NIPPLE, PIPE			30	520A602	8	Stud, Heat Exchanger Flange Mtg.
	505-109	1	Unhoused Plants (1-1/2 x 2-1/2")		405D1285	1	Panel, Front End Hsg. - Housed Plants Only
	505-109	2	Housed Plants (1-1/2 x 2-1/2")				
	505-85	1	Unhoused Plants (1-1/2 x 2")				
12	505-43	2	Elbow, Pipe (1-1/2" by 90°)				
13	505-385	2	Nipple, Half --Pipe (1-1/2 x 2")				
14	503-287	2	Clamp, Hose				
15		1	Hose (Order 3-1/2" of Bulk Hose #503-356)				

## **SPECIAL PARTS SECTION**

### **FOR KB SERIES PENNSYLVANIA APPROVED GENERATING PLANTS**

Parts not listed in this section, refer to the standard, parts groups. Parts in this list are not illustrated.

## GASOLINE FUEL SYSTEM & ANTI-DIESELING GROUP

PART NO.	QTY. USED	PART DESCRIPTION
307B284	1	Solenoid & Lead Assy., Anti-Dieseling - Prior to Spec L
159C685	1	Line, Fuel Pump to Carburetor
415B161	1	Tank, Fuel (55-gal.) - Begin Spec J
415-43	1	Cap, Fuel Tank Fill - Begin Spec J
415-44	1	Cap, Fuel Tank Vent - Begin Spec J
415K7	2	Line, Fuel (25-ft.) - Begin Spec J
415A140	1	Tube, Fuel Tank Suction - Begin Spec J
505-7	2	Bushing, 1/4 x 1/8" (Fuel Tank) - Begin Spec J
505-18	3	Bushing, 1/2 x 1/4" (Fuel Tank) - Begin Spec J
505-56	2	Plug, 1/2" (Fuel Tank) - Begin Spec J
505-211	1	Pipe, Fuel Tank Fill (2 x 30") - Begin Spec J
505-212	1	Pipe, Fuel Tank Vent (1-1/4 x 36") - Begin Spec J
307P567	1	Valve, Solenoid - Reservoir Tank (36-Volt) - Spec J through K

## IGNITION GROUP

PART NO.	QTY. USED	PART DESCRIPTION
<b>COIL, IGNITION</b>		
166P184	1	Prior to Spec J (24-Volt)
166B278	1	Spec J through K (12-Volt)
416A37	2	Cable, Battery - Prior to Spec L
416A133	5	Cable, Battery - Jumper - Prior to Spec L
416P325	1	Hydrometer

## STARTING MOTOR & BATTERY CHARGE GENERATOR GROUP - Prior to Spec L

PART NO.	QTY. USED	PART DESCRIPTION
191B208	1	Cover, Starter Mounting Hole

## GENERATOR GROUP (ALTERNATOR PORTION) Prior to Spec L

PART NO.	QTY. USED	PART DESCRIPTION
212C194	1	Rig Assy., Brush
214A46	1	Brush
211E96	1	Bell, End - Alternator to Exciter
232B1253	3	Cover, End Bell Opening (Screened)

## GENERATOR GROUP (ROTATING EXCITER PORTION) Prior to Spec L

PART NO.	QTY. USED	PART DESCRIPTION
*	1	Armature Assy.
*	1	Frame Only
212C1143	1	Holder, Brush Rig
*	4	Pole Shoe
*	1	Coil Assy. (Set of 4 Coils)
515-130	1	Key, Exciter to Alternator Armature
212C211	1	Rig Assy., Brush
212B1011	4	Spring, Brush
214A18	4	Brush
211C92	1	Cover, Exciter
336A629	2	Jumper, Brush Rig
232A1205	1	Washer, Centering - Armature Through Screw
232A1421	As Req.	Washer, Shim - Exciter to Alternator Armature

\* - Order by description, giving complete ONAN Model, Spec, and Serial Number.

## AUTOMATIC VOLTAGE REGULATOR GROUP Prior to Spec L

PART NO.	QTY. USED	PART DESCRIPTION
305P117	1	Regulator, Voltage
305C163	1	Base Assembly, Voltage Regulator
312A58	1	Condenser, .1 Mfd.

## CONTROL GROUP (ENGINE INSTRUMENTS PORTION)

PART NO.	QTY. USED	PART DESCRIPTION
193-3	1	Gauge, Oil Pressure - Prior to Spec L
193-8	1	Gauge, Water Temperature - Prior to Spec L
<b>PANEL ONLY, LOWER CONTROL</b>		
301C1316	1	Prior to Spec J
301C2428	1	Spec J through K
307B234	1	Solenoid Start - Prior to Spec L
307A272	1	Bracket, Start Solenoid - Prior to Spec L
<b>RESISTOR</b>		
304A222	1	15-Ohm, 50-Watt - Adjustable - Spec J through K
304A62	1	25-Ohm, 25-Watt - Prior to Spec J
304A283	1	35-Ohm, 25-Watt - Prior to Spec L
304A37	1	6-Ohm, 75-Watt - Prior to Spec J
304A32	1	15-Ohm, 10-Watt - Prior to Spec L
304A11	1	50-Ohm, 25-Watt - Prior to Spec J
304A19	1	3-Ohm, 50-Watt - Prior to Spec L
304A58	1	50-Ohm, 50-Watt - Prior to Spec L
304A46	1	10-Ohm, 50-Watt - Prior to Spec L

RELAY, IGNITION		
306A141	1	Prior to Spec J
306A139	1	Spec J through K
307P819	1	Begin Spec L
308-26	1	Switch, Start-Stop - Prior to Spec J
308P138	1	Switch, Run-Stop - Spec J through K
308A67	1	Guard, Switch - Prior to Spec J
323-52	1	Socket, Ignition Relay - Begin Spec L
332P943	2	Spacer, Ignition Relay Socket - Begin Spec L
307P778	1	Spring, Ignition Relay Hold Down - Begin Spec L

### CONTROL GROUP (AC OUTPUT PORTION) UNHOUSED MODELS

NOTE: Unhoused models with OPTIONAL Meter Panel use Control Group listed for housed models.

PART NO.	QTY. USED	PART DESCRIPTION
301C1317	1	Panel Only, Control - Upper - Prior to Spec L
*	1	Box Only, Control
303-65	1	Rheostat, Voltage Regulator - Prior to Spec L
303P32	2	Knob, Rheostat - Prior to Spec L
303P90	1	Rheostat & Switch, Volt Regulator - Prior to Spec L
RESISTOR, OFF START DISCONNECT RELAY - Prior to Spec L		
304A131	1	120/240-V, 1-Ph., 120/208-V, 3-Ph., and 120/240-V, 3-Ph. Models (750-Ohm, 25-Watt)
304A563	1	277/480-V, 3-Ph. Models (2500-Ohm, 25-Watt)
RELAY, START DISCONNECT - Prior to Spec L		
307C664	1	120/240-V, 1-Ph., 120/208-V, 3-Ph., and 120/240-V, 3-Ph. Models
307C707	1	277/480-V, 3-Ph. Models
BLOCK, TERMINAL - Prior to Spec L		
332A333	1	2-Place, 1-Ph. Models
332A406	1	3-Place, 3-Ph. Models
STRIP, BLOCK MARKER - Prior to Spec L		
332A600	1	2-Place (23, 24), 1-Ph. Models
332A426	1	3-Place (18, 19, 20), 3-Ph. Models
308A12	1	Switch, Volt Selector - 3-Ph. Models - Prior to Spec L
303-76	1	Knob, Volt Selector Switch - 3-Ph. Models - Prior to Spec L
315B20	1	Transformer, 277/480-V, 3-Ph. Models - Prior to Spec L
320P307	1	Lock, Circuit Breaker Handle - Begin Spec L
301A2727	1	Handle, Control Panel - Begin Spec L

\* - Order by description giving complete Model, Spec, and Serial Number.

### CONTROL GROUP (AC OUTPUT PORTION) HOUSED MODELS

NOTE: Use this group also for Unhoused Models with OPTIONAL METER PANEL.

PART NO.	QTY. USED	PART DESCRIPTION
PANEL ONLY, CONTROL - Prior to Spec L		
301C1356	1	1-Ph. Models
301C1374	1	3-Ph. Models
*	1	Box Only, Control
303-65	1	Rheostat, Voltage Regulator - Prior to Spec L
303P32	2	Knob, Rheostat - Prior to Spec L
303P90	1	Rheostat and Switch, Volt Regulator - Prior to Spec L
RESISTOR, OFF-START DISCONNECT RELAY - Prior to Spec L		
304A131	1	120/240-V, 1-Ph., 120/208-V, 3-Ph. and 120/240-V, 3-Ph. Models (750-Ohm, 25-Watt)
304A563	1	277/480-V, 3-Ph. Models (2500-Ohms, 25-Watt)
RELAY, START DISCONNECT - Prior to Spec L		
307C664	1	120/240-V, 1-Ph., 120/208-V, 3-Ph. and 120/240-V, 3-Ph. Models
307C707	1	277/480-V, 3-Ph. Models
315B20	1	Transformer, 277/480-V, 3-Ph. - Prior to Spec L
320P307	1	Lock, Circuit Breaker Handle - Begin Spec L
301A2727	1	Handle, Control Panel - Begin Spec L

\* - Order by description giving complete Model, Spec, and Serial Number.

### CITY WATER COOLING SYSTEM GROUP (PLANTS WITHOUT WATER COOLED EXHAUST MANIFOLDS OR HEAT EXCHANGER) - OPTIONAL EQUIPMENT - Prior to Spec L

PART NO.	QTY. USED	PART DESCRIPTION
505-272	1	Nipple, Half (1-1/2 x 4")
505-385	1	Nipple, Half (1-1/2 x 2")
307P639	1	Valve, Solenoid